ASHRAE Symposia, Technical Session Reports . . . . . Pg. 26

AIR CONDITIONING HEATING & REFRIGERATION NEWS

The Newspaper of the Industry

RESIDENTIAL — COMMERCIAL — INDUSTRIAL — March 20, 1961

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Defense Dept. A. C. Spending To Continue

Spokesman Sees Possible Rise In Annual Rate

By C. Dale Mericle

WASHINGTON, D. C. — Purchase of air conditioning and refrigeration by the U.S. Dept. of Defense will likely continue or exceed the current rate of an estimated $111 million annually, believes a government spokesman.

In the 1960-61 fiscal year, ending June 30, the Defense Dept. will have invested some $90 million for air conditioning brand new facilities.

As much as another $21 million will have been spent for air conditioning of existing facilities of all types.

The latter is divided among the three services as follows:

Air Force—$12 to $15 million.

Army—$3½ to $4 million.

Navy—$2 million.

In addition to all the above, there is considerable residential type air conditioning going into Capehart and Wherry housing, although this is rapidly tapering off.

During the 1961-62 fiscal year, which starts July 1, there will be perhaps 7,000 Capehart housing units air conditioned and likewise another 5,000 Wherry units.

(The Capehart program consists of new dwelling units, while the Wherry program covers remodeling of existing structures. Both are privately financed.)

The belief that defense expenditures for air conditioning

(Continued on Back Page, Col. 1)

When Is a Salesman Engineering?

"— whenever engineering calculations or an engineering design, including a duct layout for an air conditioning system, is submitted to a customer, such work should first be checked by a licensed professional engineer."

On page 2, Raymond Mirrer, a professional engineer and lawyer, gives his views on the implications of the recent New City, N. Y., trial of an air conditioning salesman on the charge of practicing engineering without a license. The original story appeared on page one of the March 6 issue.

Thermoelectric Water Cooler Due In April

COLUMBUS, Ohio—Westinghouse Electric Corp. will begin production in April of a thermoelectric water cooler which it claims is "the nation's first home appliance using the principle of thermoelectricity to be manufactured on a production line basis."

Designed for use in either homes or offices, the water cooler's refrigeration process comes directly from electricity. Except for a fan at the bottom used to dissipate the heat drawn from the cooling elements, there are no moving parts to the thermoelectric cooling system.

John W. Craig, Westinghouse vice president and general manager of the Major Appliance Div.

(Continued on Page 4, Col. 5)

(Picture story on new Norge thermoelectric refrigerator-freezer appears on page 10)

FHA To Require ARI Certification for Unitary Air Conditioning Equipment

By George M. Hanning

WASHINGTON, D. C.—Only unitary air conditioning equipment displaying the Air-Conditioning & Refrigeration Institute's symbol of certification and listed in the ARI certification directory may be installed in homes insured by the Federal Housing Administration, according to General Revision No. 3 to the FHA's Minimum Property Standards.

Effective date of this requirement will be established by each of FHA's field offices except in Hawaii and Puerto Rico. The revision, issued last December the NEWS has just learned, was scheduled to take effect within 90 days, though each office will set the date for its area.

Thus, while the revisions are not yet in effect in most areas, they will be soon. The Detroit office, for example, is just now mailing out copies of the revisions and has set an effective date of April 15.

Although the ARI would not comment on the FHA move, Ted Kellogg, manager of publicity and information, said that 52 manufacturers will be listed in the new certification directory, expected to be out early in April.

While a number of manufacturers of residential air conditioning equipment are not participating in the ARI certification program, one source estimated that the participating

(Continued on Page 31, Col. 1)

✓ INSIDE THIS ISSUE

WHAT ARW CAN and CAN'T do for its members. Past President Harry Alter outlines function of association and spells out its limitations 8

OPEN-TYPE vs. HERMETIC COMPRESSOR discussion continues in Tech Center.....24

ASHRAE TECHNICAL SESSIONS, SYMPOSIA—NEWS reviews significant conclusions.26

HERMETIC TRENDS & Service Requirements (6) 29

EDITORIAL 20

OFF THE CHEST 20

WHAT'S NEW 22

HEATING NEWS 25

YOU ASKED ABOUT IT.....30

Wilmington Project To Show Home Builders How Cooling Boosts Sales

WILMINGTON, Del.—Wilmington has been chosen as the site for a test marketing program, to be launched this spring, to promote the use of air conditioning in new residential home construction.

Purpose of the program is to prove to home builders that residential air conditioning, properly used and aggressively promoted, is a new and highly effective tool for increasing the sale of new houses.

Wilmington was selected as having a climate typical of that of many cities in the temperate zone and as representative of medium-sized communities with fast-growing residential areas.

The "Wilmington Residential Project," as it is called, will be conducted under the auspices of the Air-Conditioning & Refrigeration Institute.

The program was developed and is currently being supported by eight manufacturers, all members of the ARI, in cooperation with *House & Home* magazine.

These concerns include six manufacturers of refrigeration equipment, Carrier, Chrysler, General Electric, Lennox, Westinghouse, and York Div. of Borg-Warner; Minneapolis-Honeywell, a manufacturer of controls; and du Pont, supplier of "Freon" refrigerants.

The Delaware Power & Light Co., Delaware Association of Home Builders, and other local groups are participating in the test promotion. Contractors taking part in the program will air condition their model homes and sell new homes equipped with air conditioning on a non-optional basis.

The promotion, to start in May, will make use of newspaper and radio advertising, press re-

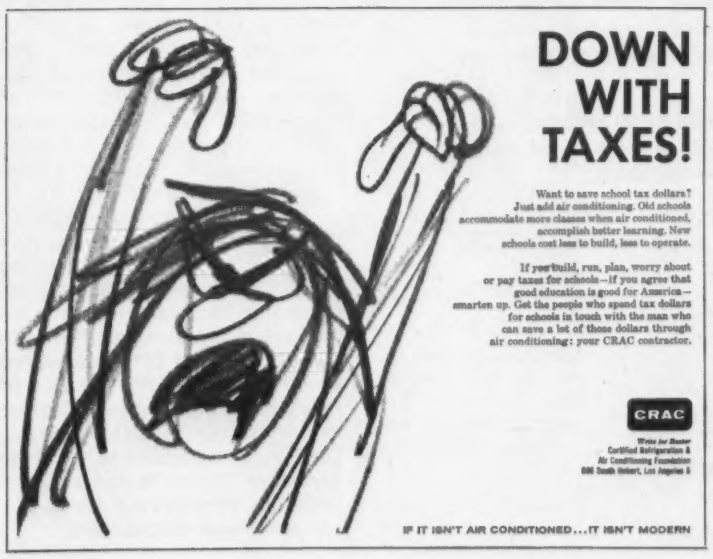
(Continued on Back Page, Col. 1)

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

CRAC Drive Pushes School Cooling


DOWN WITH TAXES!
Want to save school tax dollars? Just add air conditioning. Old schools accommodate more classes when air conditioned, accomplish better learning. New schools cost less to build, less to operate.
If you build, run, plan, worry about or pay taxes for schools—if you agree that good education is good for America—smarten up. Get the people who spend tax dollars for schools in touch with the man who can save a lot of these dollars through air conditioning: your CRAC contractor.
CRAC
IF IT ISN'T AIR CONDITIONED...IT ISN'T MODERN

Cartoon Ads Cite Tax Savings Angle

LOS ANGELES—Members of the Refrigeration & Air Conditioning Contractors Association of Southern California firmly believe that there are many good reasons for air conditioning schools the year round, so they are now engaged in an active campaign to educate the citizens of this area in general, and school boards and other influences in school construction in particular, on the advantages of air conditioning.

Through the medium of its CRAC (Certified Refrigeration & Air Conditioning Foundation) advertising program, the RACCA

(Continued on Back Page, Col. 2)

Gamesmanship In the Heating Business

Will playing games help plumbing and heating wholesalers become better businessmen? Amstan Supply Div. of American Radiator and Standard Sanitary Corp. is betting affirmatively on this concept.

To find out if it's right or wrong, Amstan pitted the wits of its 63 branch managers against an IBM computer.

Based on data fed into it, the computer ground out answers on the effect of their decisions upon sales and profits.

Amstan is deadly serious about this contest, which was tailored specifically to the market in which this American Radiator Div. operates.

It hopes that these games not only will point out to branch managers what needs to be done to improve sales, but specifically how to go about corralling them.

How To Play

Six competing Amstan branch managers imagine that they're trying to sell three Amstan product lines to 300 potential customers.

These latter postulates are composites of 1,200 actual or potential Amstan customers. Each simulated buyer has his own purchasing patterns and supplier preferences programmed into the computer.

Every player starts with a list of six salesmen—of varying abilities—plus basic financial information, and other market data about all 300 customers (such as credit limitations and

(Continued on Page 14, Col. 1)

Lawyer-Engineer Discusses—

When Is an Air Conditioning Salesman Illegally Practicing Engineering?

Raymond Mirrer, P. E., Member, New York Bar

I was recently called upon as president of the Brooklyn Engineers' Club to render assistance to a salesman who earned his living selling air conditioning installations. He had been indicted by the district attorney of an upstate New York county for illegally practicing professional engineering.

The basic problem involved an interpretation of the state laws to determine at what stage a sales representative who has engineering training and who is expected to make surveys and submit a quotation for a proposed design is deviating from his role as a salesman and is actually practicing as a consulting engineer.

Unfortunately, many of us do not realize that engineers must adhere to the same legal requirements as doctors and lawyers. When a lawyer graduates from law school, he may call himself a lawyer and obtain a job as such, provided he does not practice or offer to practice law to the general public. He must practice his profession under the supervision of an attorney until he passes the bar exam and is duly admitted as a member of the State Bar.

Likewise, the engineering graduate may not legally distribute business cards to potential customers wherein he represents himself as an engineer who is available for consulting services unless he has been duly certified by his respective State Board of Examiners of Professional Engineers.

Certification generally requires an engineering degree, plus four years of professional-level experience plus the passing of a two-day written examination.

Accordingly, for the protection of the engineer, his employer, and the customer, whenever, engineering calculations or an engineering design including a duct layout for an air conditioning system, is submitted to a customer, such work should first be checked by a licensed professional engineer.

Otherwise, the consequences may involve criminal proceedings against the engineer and his employer who may be a contractor. As an added problem, the customer may refuse to make payment for work performed, raising as a proper legal defense that the contractor was not legally permitted to enter into a contract involving furnishing of engineering services.

Salesman Acquitted Because of Lack Of Legal Evidence

In the instant case, the salesman was acquitted because of the lack of legal evidence that he actually represented himself or acted in the capacity of a design engineer.

However, this case should serve as an admonition that the enforcement machinery has been greatly strengthened and there is presently a strong drive to seek out and prosecute those individuals who are flouting the law by improperly representing themselves as being qualified to handle engineering work.

'Get License or Have Professional Engineer Check Design Work'

Therefore, it is incumbent upon all individuals who are involved in the furnishing of engineering services to take steps to become licensed, if qualified, and if not, to have all design work checked by a licensed Professional Engineer.

As a further warning, a contractor may not offer engineering services to a customer or potential client merely because he utilizes the services of a professional engineer.

Such services may be provided only in conjunction with a complete "package" deal whereby a manufacturer or contractor supplies an end product for which he is responsible. The engineering portion cannot be offered as a separate entity except by a licensed Professional Engineer for any type of engineering work such as building or equipment design whereby health and safety factors are involved.

It should also be noted that even though a firm employs or retains the services of a Professional Engineer, such firm may not represent itself as "Engineers and Contractors" or "Engineers and Manufacturers" unless the firm itself is duly registered to practice Professional Engineering.

In New York, such registration is limited to those corporations who were providing engineering services before 1935 which is the date the law was passed prohibiting the practice of engineering by corporations.

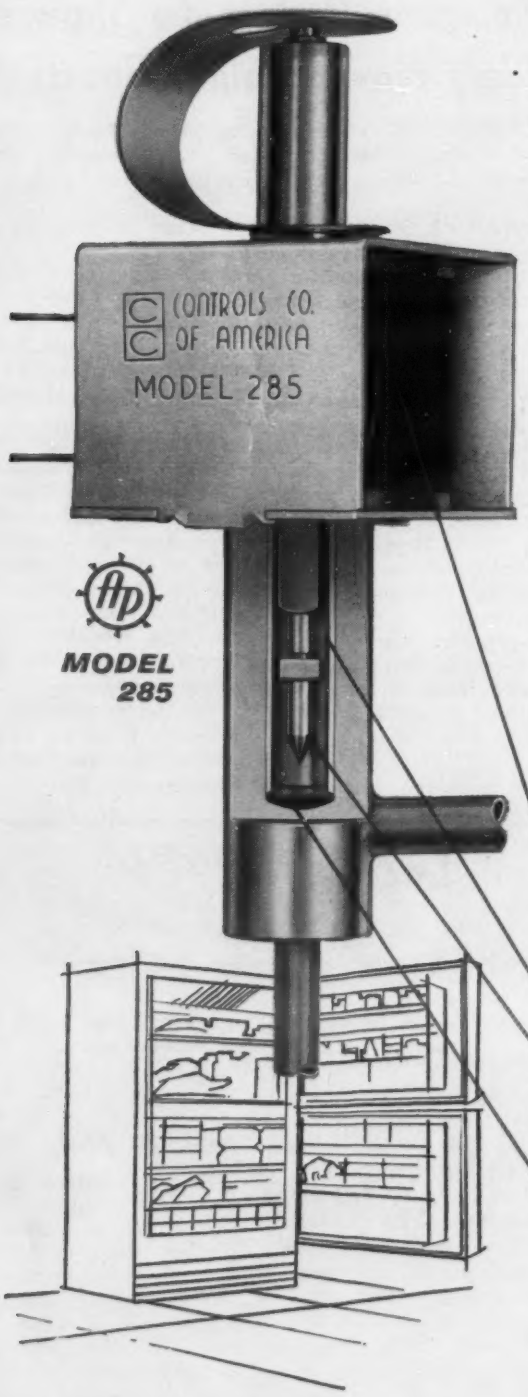
Other States do permit corporate engineering practice provided certain conditions are met and it is important to check respective State Statutes before offering engineering services in a particular jurisdiction.

Phillip Colgrove, Tecumseh Eastern Sales Mgr., Dies

TECUMSEH, Mich. — Phillip Colgrove, 49, eastern division sales manager of Tecumseh Products Co., died recently in Herrick Memorial hospital, shortly after admittance.

He was taken to the hospital by his wife when he became ill at home after attending a basketball game.

Colgrove had been associated with Tecumseh Products since June 30, 1944. Besides his wife, Jean, he is survived by three daughters, two brothers, and two sisters.



MODEL 285

Open and shut case for the only valve that offers "nonstick" dependability for refrigerators utilizing hot gas defrosting

This new Model 285 hot gas defrost valve always opens and closes on schedule, making automatic defrosting of domestic refrigerators and home freezers absolutely foolproof. Everything possible has been done by Controls Company's engineers (see cutaway) to prevent "hanging-up" and the food spoilage that results from such valve defection. That's why if you're considering hot gas defrosting, your opening move is to investigate the new A-P Model 285. Write today for full facts.

Here's how A-P engineers solved a sticky problem

SOLENOID lifts needle . . . gravity plus pressure drop closes it. Solenoid coil is encapsulated with a layer of EPOXY resin — moisture resistant for long life. Coils available with open yoke (shown) or total metal enclosure.

PLUNGER TUBE is stainless steel with "mirror-smooth" internal surface finish. Highest corrosion resistance.

STAINLESS STEEL NEEDLE slides smoothly without sticking. Head of needle is radiused to give one-point contact in open position. Edges of plunger are rounded for minimum friction and long life.

VALVE INTERIOR is polished to within 20 rms for minimum coefficient of friction. Seat as well as needle is of stainless steel adding to no-stick, long-life operation.

MISCELLANEOUS SPECIFICATIONS: 3/32" orifice. 225 lb. lift. 200 cc/minute max. leak at 200 lb. dry air. Coils for 115- or 230-volt, 60-cycle service.

Creative controls for industry

CONTROLS COMPANY OF AMERICA

HEATING AND AIR CONDITIONING DIVISION

2460 N. 32nd Street, Milwaukee 10, Wisconsin • Cooksville, Ontario • Zug, Switzerland

HAC-18-60

A MOTOR IS A MOTOR IS A MOTOR IS A MOTOR IS A MOTOR IS A MOTOR

January Room Air Conditioner Sales Up 43% over 1960 NEMA Estimates

DETROIT — Estimated total industry sales in January by manufacturers of room air conditioners jumped 43% over a year earlier, according to statistics issued by National Electrical Manufacturers Association.

NEMA estimated that January sales totaled 96,200 units, compared with 67,200 in January, 1960. These figures are based upon expansion of data reported to the NEMA Statistical Dept. to cover total industry sales including exports.

As reported in the March 13 issue of the NEWS, statistics from various areas on distributor and dealer sales of air conditioners in January showed volume up in some areas and down in others. A later report, from Kansas Gas & Electric Co., Wichita, indicated that retailers in that area sold 21 central air conditioners in January, against 22 a year earlier, and 30 room units, the same as in January, 1960.

A report just received by the NEWS from New Orleans Public Service, Inc., lists dealer sales of room air conditioners in 1960 in that area as totaling 25,571 compared with 25,500 in 1959. The utility estimates that New Orleans dealers will sell 30,000 room units this year.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

1960 Refrigerator Sales Totaled 3,406,000 Units

NEW YORK CITY—Industry sales of electric household refrigerators in 1960 totaled 3,406,000 and those of farm and home freezers 1,084,000, the National Electrical Manufacturers Association has estimated.

In 1959, refrigerator sales amounted to 3,785,000, according to NEMA. Freezer sales in 1959 were estimated at 1,205,400.

December sales of refrigerators declined to 253,000 from 282,600 a year earlier but those of freezers rose to 66,800 from 63,200 in December, 1959.

The figures are based upon expansion of data report to the NEMA Statistical Dept. to cover total industry sales including exports.

House Group Ok's National Fuels Policy Committee

WASHINGTON, D. C. — The House Rules Committee recently approved, 9 to 5, a resolution that would establish a 15-man joint Congressional committee to recommend a national fuels policy.

The study was requested in a resolution introduced by Rep. Wayne N. Aspinall (D., Colo.). He told the House Rules Committee during a hearing that the United States had been negligent in not seeking to strengthen policy "relative to the conservation, development, and wise use of these [fuel] resources."

He acknowledged, it was reported, that such a policy could lead to control of all fuels.

Rep. Walter Rogers (D., Texas), lone opposition witness, argued that the proposal to set up the committee was the possible forerunner to government control.

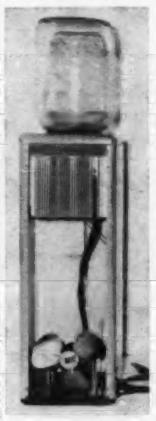
Although some committee members questioned the wisdom of setting up the committee, Rep. Cleveland M. Bailey (D., W. Va.) claimed there was a great need "to bring order out of chaos in the increasingly destructive and wasteful practices of our competing national energy industries."

Thermoelectric--

(Continued from Page 1, Col. 2)

here, described the development as "an important step toward the day when thermoelectric appliances may be commonplace in the home."

Although the unit will be previewed March 21 at a conference of the Edison Electric Institute in Chicago, its formal presentation to the industry will be March 27 in Las Vegas, Nev., at the annual convention of the American Bottled Water Association.



The new bottle-type cooler will be produced in gray for office use, and white for home applications. In appearance, it resembles a standard, compressor-operated cooler, but within the cabinet the cooling system requires approximately 25% less volume. The 36-in. cabinet height was retained because it places the water tap at a convenient level.

Craig pointed out that Westinghouse has been actively engaged in thermoelectric studies for some 30 years, but "we have just recently uncovered materials which can be used efficiently enough to permit practical applications, such as in the thermoelectric water cooler."

Asked if Westinghouse has set a suggested list price for the cooler, a spokesman said the company does not establish or suggest list prices on major appliances.

In answer to another question, on how the cooler will be marketed, the spokesman said this product initially is being sold to regular Westinghouse bottle water distributors who probably will use the coolers to secure consumer customers for their bottle water service.

Prototype thermoelectric appliances were introduced by Westinghouse two years ago. These included a dehumidifier, refrigerator, baby bottle "cooler-warmer," mobile hostess cart with refrigeration and oven compartments, and electroluminescent lighting panels which can heat, cool, or light a room, according to the manufacturer.

Firm Moves

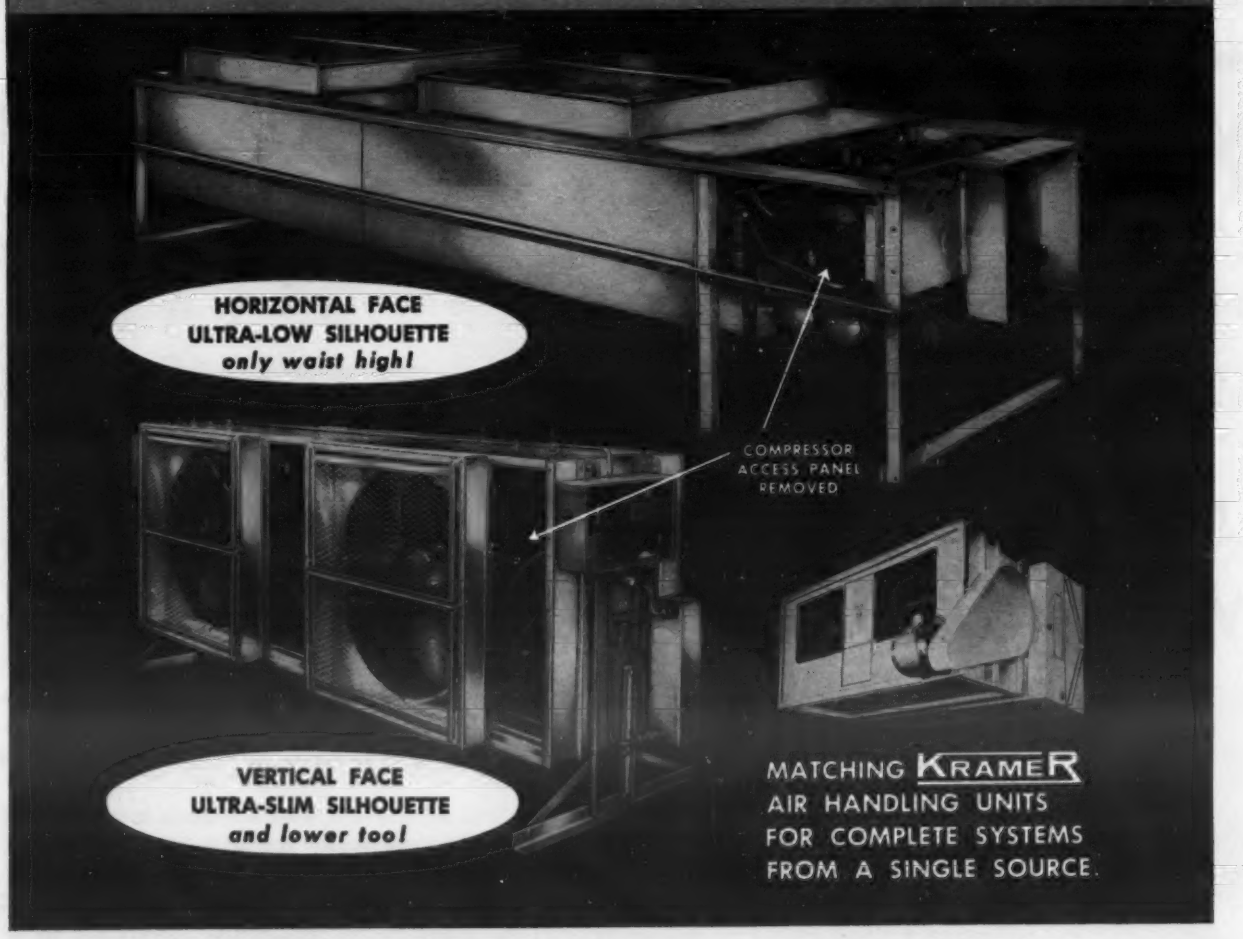
DECATUR, Ga.—The Decatur Heating & Air Conditioning Co. has moved into a new building at 154 New St.

From the leader in air-cooled condensing

the new KRAMER

UNICON-COMPRESSOR

PACKAGED *WATER-FREE* CONDENSING UNIT



3 to 70 TONS—HORIZONTAL or VERTICAL FACE

The low, slim-trim lines of the new Kramer air-cooled UNICON-COMPRESSOR give it unequaled flexibility in any architectural setting. Space saving outdoor design and low, low operating weight combine to reduce structural and engineering problems. Easy and economical to install, the complete packaged UNICON-COMPRESSOR has matchless accessibility for servicing. Its corrosion resistant aluminum casing, and its frame galvanized after fabrication, eliminate painting maintenance.

And remember—no place in the U. S. A. is too hot (or too cold) for the UNICON-COMPRESSOR. With the patented Kramer Winterstat it will operate any time of the year, without adjustment, even in the dead of winter.

Write for bulletin C460B.

KRAMER TRENTON CO., Trenton 5, N. J.

47 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

do you need a higher efficiency small blower wheel?

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FIRST CLASS
PERMIT NO. 182
DAYTON, OHIO

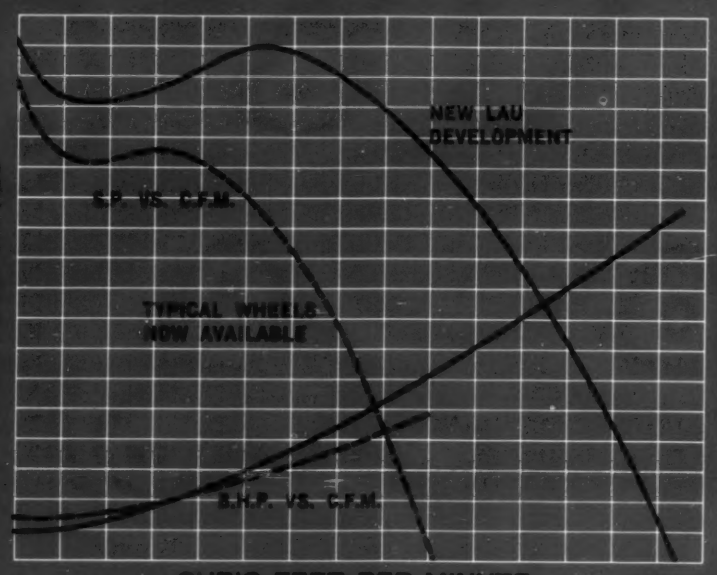
BUSINESS REPLY MAIL
No Postage Stamp Necessary if Mailed in the United States

POSTAGE WILL BE PAID BY

Mr. William H. Wentling, Director of Engineering
THE LAU BLOWER COMPANY
2027 Home Avenue
Dayton 7, Ohio

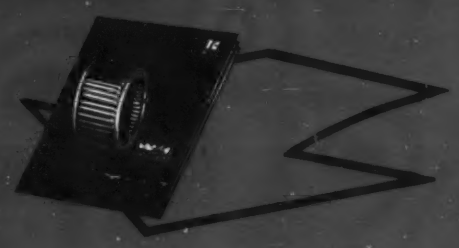
INTRODUCING A NEW LAU ENGINEERED BLOWER WHEEL... 4 3/4" TO 8 1/2

BLOWER PERFORMANCE



NEW LAU DEVELOPMENT

TYPICAL WHEELS NOW AVAILABLE



Lau Engineering has successfully developed a blower wheel that outperforms any wheel of comparable size tested. This powerful, compact unit is specifically designed for installation in room air conditioners but can be used effectively in most appliance applications. Lau "spun" construction contributes greatly to the wheel's structural rigidity and to a very high CFM to WATT ratio.

This new Lau wheel is offered in a customer's choice of aluminum, cold rolled steel or zinc grip and in a range of diameters, blade lengths, bore sizes and back plate designs.

For a complete engineering data file on this new Lau high performance wheel send the attached, postage paid card to Wm. H. Wentling, Director of Engineering, The Lau Blower Company, 2027 Home Ave., Dayton 7, Ohio.

Mr. William H. Wentling, Director of Engineering
THE LAU BLOWER COMPANY
2027 Home Avenue
Dayton 7, Ohio

Please check

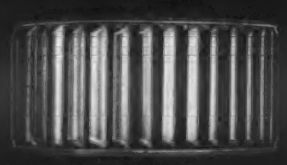
☐ send complete engineering file ☐ we would like to see sample wheel

Name_____

Position_____

Company Name_____

Address_____



Single inlet wheel is standard. Double inlet (wheels back to back) is available. Choice of solid, pied-out or coned back plate.

More Products Exhibited at Heating and Air Conditioning Show

TWO DEMONSTRATION UNITS set up in the Jackes-Evans Mfg. Co. booth permitted visitors to energize "Epoxy-Clad" valve coils while completely submerged in water (l.) and to operate several different types of fan coil control valves to notice their quiet performance (r.).

"PNEUMAVALVE" was the center of attraction at the Connor Engineering Corp. booth. It is a versatile air-flow regulator that adapts to low, medium, and high velocity systems without mechanical linkage or mechanical operators.

DISCUSSING A TIME-CONTROL application with a visitor to the Paragon Electric Co. booth are Dwaine O. Johnson (center) Minneapolis branch manager for Paragon, and Tom Morrison (r.), manager of commercial refrigeration. Paragon exhibited a portable time control for window air conditioners, a newly designed line of "D-Frost-O-Matic" time controls, 4-pole time controls with a 7-day dial and 24-hour dial, and "Astro-Dial" time controls.

NBS Accepting Bids On Lab, Boiler Plant

WASHINGTON, D. C.—Secretary of Commerce Luther H. Hodges announced recently that bids are being accepted for the construction of the first two buildings of new laboratories of the National Bureau of Standards to be built near Gaithersburg, Md.

Construction of the two buildings, the Engineering Mechanics Laboratory and the boiler plant, will be the first major step in the initial phase of the total relocation of the bureau from its present site in northwest Washington.

Equipment for the boiler plant will include steam heating equipment for the entire bureau, and four 3,000-hp refrigerating units to provide chilled water for laboratory purposes and for air conditioning.

What's In a Name?

ROCKVILLE CENTRE, N. Y. — Incorporation papers were filed recently by Harold M. Sichel for a local heating and air conditioning firm named Weather or Not, Inc.

RACCA of So. California Launches 5-Point Action Program for 1961

LOS ANGELES—A five-point program of action to be tackled by the Southern California Refrigeration & Air Conditioning Contractors Association during 1961 was announced recently by L. P. Jacobsen, president of the RACCA chapter.

Called for in the program are a wide range of activities in key fields and areas of major interest to the more than 200 contractors associated with the air conditioning and refrigeration industry in Los Angeles and Orange Counties. Specifically, the RACCA program of action will be focused on the following:

1. Increased activity in relation to legislative matters on both the local and state level.

2. Furtherance of labor-management relations with respect to pension, health and welfare, grievances, apprentice and journeymen training programs, and industry promotion efforts through the Certified Refrigeration & Air Conditioning Foundation.

3. Cooperative effort with RACCA National regarding wholesalers and manufacturers relations and liaison with such groups at the local level.

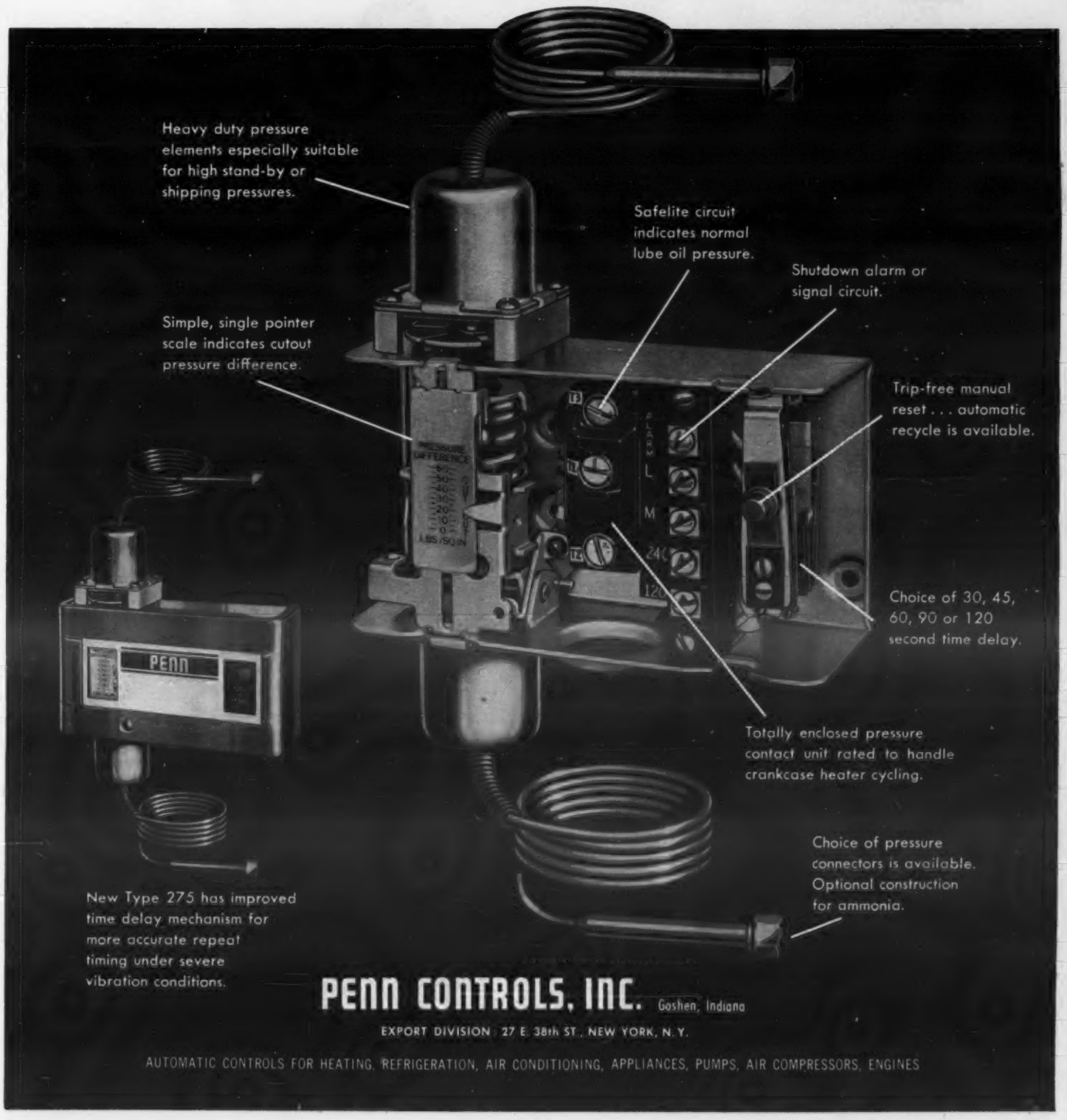
4. Development of greater service and joint industry activities with research investigation into costs of one hour of labor.

5. Establishment of means of assistance and inter-industry cooperation in the planning and staging of the RACCA National convention and ARI national exhibit in Los Angeles during February, 1962.

NOW

BETTER THAN EVER!

New Type 275 is the sure way to stop slow pickup or loss of lube oil pressure from crippling pressure-lubricated refrigeration compressors . . . get the complete story from your wholesaler!


Heavy duty pressure elements especially suitable for high stand-by or shipping pressures.
Safelite circuit indicates normal lube oil pressure.
Shutdown alarm or signal circuit.
Simple, single pointer scale indicates cutout pressure difference.
Trip-free manual reset . . . automatic recycle is available.
Choice of 30, 45, 60, 90 or 120 second time delay.
Totally enclosed pressure contact unit rated to handle crankcase heater cycling.
Choice of pressure connectors is available. Optional construction for ammonia.
New Type 275 has improved time delay mechanism for more accurate repeat timing under severe vibration conditions.
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EXPORT DIVISION 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

What ARW Can and Can't Do for Its Members Discussed by Harry Alter (1)

PRINCIPAL ADDRESS at the recent annual convention of the Air Conditioning & Refrigeration Wholesalers Association was made by Harry Alter, board chairman of the Harry Alter Co., Chicago, and a past president of the Association. In this talk he describes some of the problems which face the supplies and equipment wholesaler, and what the association might do about them. In order to publish Alter's comments fully the NEWS is presenting his talk in two parts.

By Harry Alter, Board Chairman,
The Harry Alter Co., Inc.

I have been asked to talk about your ARW association and what it does and can do for its members. But first I would like to discuss what it can't do and what it should not even attempt to do.

Your association cannot provide a shelter for those of us in this industry who are dishonest, who are incompetent, lazy, shiftless, or downright stupid. Nor is it a haven for a member who is hopelessly under capitalized. ARW can do nothing to guarantee us an automatic profit nor an effortless success.

Neither can it eliminate competition, nor stop mal-practices, nor correct unethical conduct, nor prevent price and profit cutting indulged in by some among its membership; nor can it attempt to prevent a newcomer from opening a store and entering this already highly competitive field.

Your association cannot attempt to coerce nor threaten with the bare implication of a boycott, any manufacturer in this industry whose policies and practices appear objectionable. All of these things are prohibited by Federal anti-trust laws and I have no doubt that this country and our industry is better off with such laws.

Let us see what ARW does and can accomplish for its members.

First that comes to mind, and it is an old story, is the opportunity to become better acquainted with your competitors by holding and attending local meetings. The guy that you have pegged as a "cutthroat" probably harbors worse thoughts about you, but when you get to know him better and likewise he becomes better acquainted with you, it is more than likely that you both will discover how wrong you each were.

Handles Relationships With Government, Other Industry Segments

Then an important function of our trade association is to represent our segment of the industry in its relations with the government; in its relations with other segments of our industry, and in the continuous and continuing competitive battle between our industry and others for a bigger share of the consumer's dollar.

One of the most important activities of ARW, I will call "educational," and this could and should be enlarged upon. I call it "Educational" because of the broadness of its meaning. It embraces propaganda, public relations, exchange of data and information, and what I choose to call "hollering" about everything that is going on which we know to be wrong—this is the "Holler Technique."

I am thinking here, for example, of the appearance in the market place of parts, components, copper tubing and fittings of foreign manufacture, competing with our American products with a difference in labor costs of less than 50 cents an hour against American $2 or $3 hourly pay rates. Should ARW take a stand on this? And if we decide to do so in favor of U. S. manufacturers, should we not "holler our heads off" about it?

Some few manufacturers like to carry water on both shoulders — in other words sell through wholesalers, but go direct on larger orders. All that we can legally do, I guess, is to raise our voices in protest, but if we holler loud enough and long enough we should get some results.

I am thinking about our own individual price cutting competition. Legally it is a dangerous subject to talk about because trade associations are always suspected of price fixing attempts. However, those of us with some experience in this area know that price cutting was not invented this year and that price maintenance agreements won't work even if they were legal.

Educational Approach To Price Cutting

But while price cutting will never be completely eliminated, certainly this condition can be improved upon by an educational approach. Every price cutter sooner or later finds that his competitors meets his new price and his temporary advantage disappears.

First we should analyze some of the causes which induce price cutting; such as:

(a) Over buying, in order to get a lower cost.

(b) Efforts to boost a declining sales volume.

(c) Failure to understand that a 5% reduction in profit margin requires about a 25% increase in sales.

When we over-buy to obtain a lower cost we often times must cut prices to reduce inventories, especially if we happen to be short of cash and then the extra profit that was counted on goes down the drain. I would like to see ARW engage in a study of inventory turnover ratios in our industry and its relation to profit. Buying a good deal more than can be sold in 60 days is not good business but is, in my judgment, risky speculation.

When our sales volume appears to be declining and we set out on a panicky price cutting campaign to boost sales quickly, we are working in the dark because we don't know

24 AIR-FLOW PATTERNS FROM EACH UNIT

...you adapt new Mueller Climatrol cooling or heat pump low sides with a screwdriver!

Talk about adapting to any situation! Each of these new units can be used in 24 different ways — adapting easily for use as a counterflow, upflow, or horizontal in either direction.

Available now from Mueller Climatrol: (1) Model 939 Air Conditioning Blower-Coil — in 2, 3, 4, 5 ton sizes . . . (2) Model 339 Heat Pump Indoor Unit in 3 and 5 ton sizes . . . and (3) Supplementary Electric Heat Package in 10 capacities from 20,500 to 82,000 BTU/hr.

They're made of modules . . . and you adapt them easily, with just a screwdriver. To change a unit, you simply separate the sections, then put them together for the air-flow pattern you want, using proper cutouts. The handsome door panel, trimmed in bright metal, covers both modules.

It's easy. And think what it saves you on inventory costs. See your Mueller Climatrol man for details on these exciting new units *soon.* Or write direct.

24 Air Flow Patterns from Each Unit — Count Them!

Mueller Climatrol
DIVISION OF NORTHINGTON

2025 West Oklahoma Ave., Milwaukee 1, Wisconsin • 1024 Westminster Ave., Alhambra, California

whether we alone are losing sales volume or whether it is prevalent in the industry. If it were possible for all of us to know for certain whether our industry sales were up or down, and I think it is posssible, I am sure there would be fewer of us to hit the panic button.

Sales and Profit Figures Would Help Reduce Price Cutting

ARW should gather sales and profit figures from its membership, and distribute this information as a guide for us in the operation of our individual enterprises. It would go a long way in reducing price cutting and improving our profit picture. Gathering and compiling this information could be done by an outside auditing firm and only consolidated figures released.

When we cut our prices and our gross profit margin in our efforts to increase sales, we must not lose sight of a peculiarity of this wholesaling business that works against such action. Unlike the case among manufacturers who have a high fixed expense, and generally a low variable expense, the situation among wholesalers is just reversed. We don't have huge sums invested in plants, machinery, equipment, and tools which, when idle or running at half capacity, represent operating losses.

Instead our investment in fixed assets is relatively low—our money is, and should be, invested principally in accounts receivable and inventory, so whether sales are very good or very bad, we should never have a huge fixed expense. On the other hand, the variable expenses of we wholesalers such as salesmen, stockroom help, office help, in-coming freight, delivery expense, etc., can be lowered when sales are off but they increase nearly in the same proportion that sales increase.

For example, if one's variable expenses run around 20% of one's sales (which is not too bad an estimate) and there followed a 25% increase in sales due to a price cutting campaign, my guess is that the variable expense items would likewise increase by 25% and would continue to represent 20% of the new higher sales volume.

Price Cutting Is Hazardous Way to Increase Sales

It is apparent, therefore, that cutting prices to reach an increased sales goal in the wholesaling business, is a hazardous undertaking and a poor way indeed to make a profit. Could not our association undertake a study of the composite figures of our membership to establish a national average of the percentages of variable and fixed overhead expenses.

This information would be of great value to the manufacturers with whom we deal. Our sales trend could provide an excellent production guide to them. God knows the profit picture among we wholesalers is such that no manufacturer will call us profiteers if our figures were made public. Who knows but that some of them may even go so far as to provide a little more profit margin for us in their new resale price schedules. Due to the nature of our business I am sure we need it.

On that subject, by the way, I might suggest to ARW that when here or there a manufacturer presents a new resale price schedule involving a reduction in profit margins for the wholesaler, there is only one thing we can do about it, and that is to holler, but let us do that real loud and in unison.

Most wholesalers feel compelled to allow a 2% cash discount to their customers to insure prompt payment of their invoices, but in many cases they are granted only 1% or ½ of 1% on their purchases, and in a few cases no cash discount whatever. Surely we have a right to protest. It is manifestly unfair also to the grantor of a cash discount who offers it as an inducement to pay him promptly, when we pay another manufacturer's net invoice without a cash discount just as promptly. Here is something else to holler about.

(To Be Continued)

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Penn Sales Conference

PENN CONTROLS, Inc., Goshen, Ind. recently held a week-long sales conference. Sales personnel, including sales representatives, from all over the United States and Canada as well as Penn's export organization, took part in the week-long conference. Also present were management personnel from the company's plants in Costa Mesa, Calif.; Toronto, Ont., Can.; and Amsterdam, The Netherlands. Sessions were devoted to extensive market and product study and sales planning for 1961.

From the largest to the smallest... and everything in between!

One complete source for quality, service and variety

Note: Special evaporators and condensers built to all industry specifications. Write for complete information.

Engineers and Manufacturers of Refrigeration and Environmental Equipment

Tenney ENGINEERING, INC.

1090 SPRINGFIELD ROAD, UNION, NEW JERSEY • PLANTS: UNION, NEW JERSEY AND WILMINGTON, N. C.

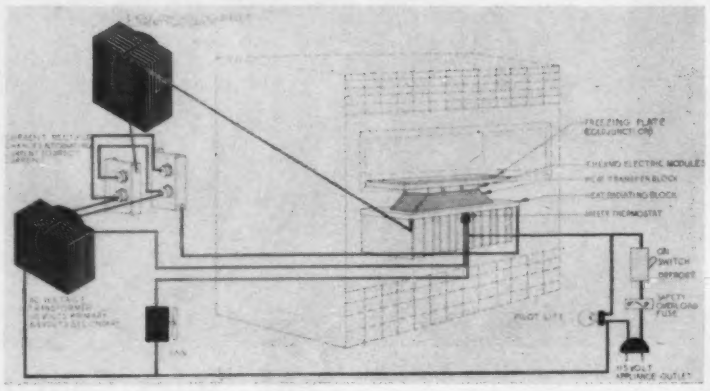
AAF Sales, Earnings Down for Fiscal '60

LOUISVILLE, Ky. — American Air Filter Co., reporting on its 1960 fiscal year, ended Oct. 31, 1960, revealed that earnings and shipments were down from the year before, but new orders booked showed an increase.

AAF President W. G. Frank announced that earnings amounted to $1.65 per common share, down 35 cents per share from the previous year. Shipments were $41,869,557 for 1960, down from $44,103,870. At the same time, orders booked increased to $43,600,000 from $41,100,000 the year before.

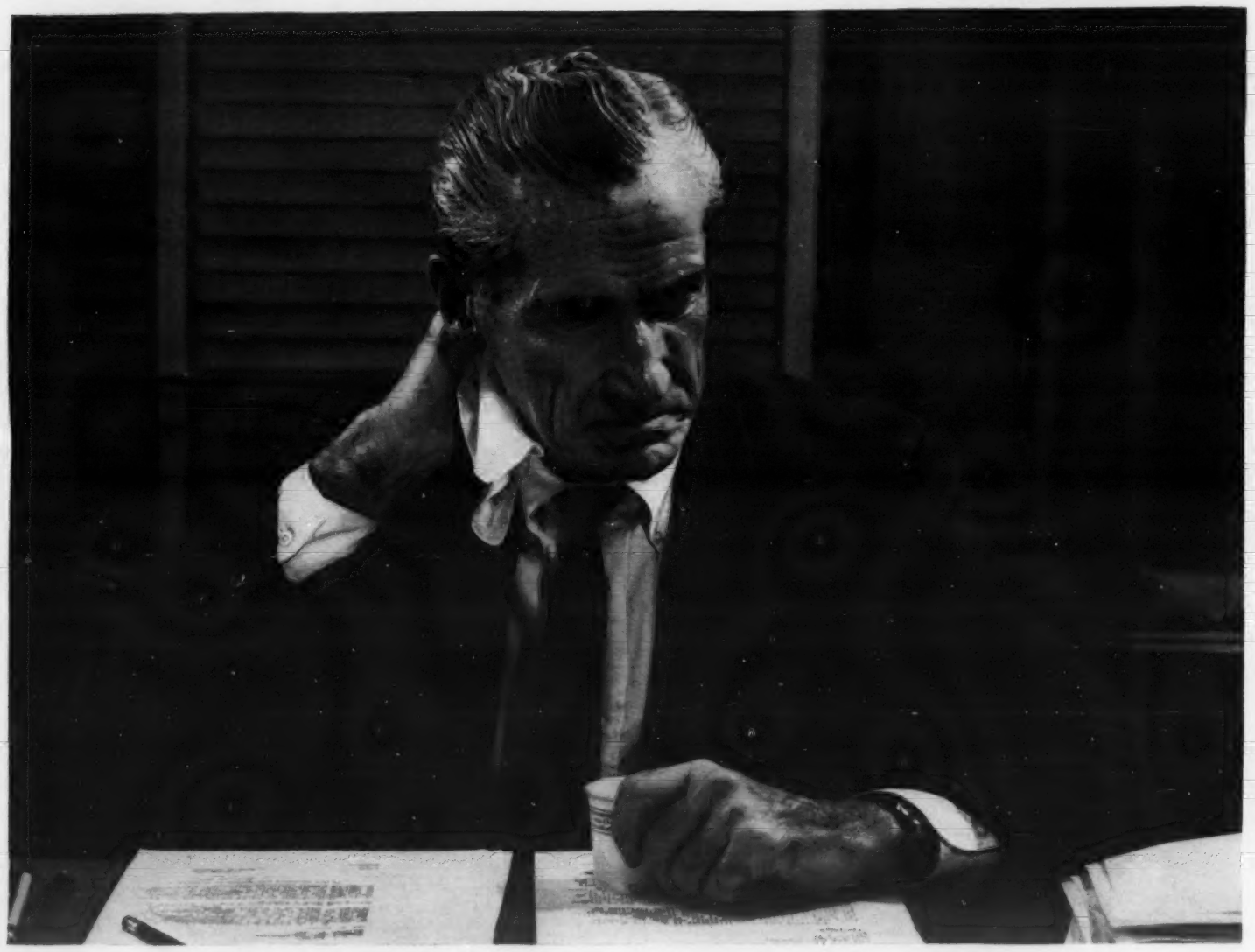
The level of new orders exceeded shipments and an order backlog of $14,200,000, which represented a 13% increase, was carried over into fiscal 1961.

Hotel Orders 500 Thermoelectric Refrigerator-Freezers



ABOVE is a pictograph of the Norge thermoelectric refrigerating system. Current is transmitted from an ordinary 115-volt household appliance outlet through a fuse to a control switch. A pilot lamp indicates at all times if the machine is in operation, according to Norge. The pictograph shows the relative location of components and such items as cold junctions, heat transfer media, and power supply.

THERMOELECTRIC REFRIGERATOR-FREEZER for commercial sale was shown in New York City recently by Norge Div., Borg-Warner Corp. An order for 500 of the units was placed by Sheraton Corp. of America. They will be installed in rooms of a new Sheraton-Chicago hotel scheduled for opening in May. (Sheraton plans to install similar units in the new Sheraton-Lincoln hotel under construction in Houston, Texas.) Sheraton reportedly is paying "under $200" for each unit, which will be installed under bathroom countertop. Measuring 17¾ in. high, 18¾ in. wide, and 13¼ in. deep, the unit will make ice cubes in 3½ to 6 hours, according to Sheraton. It has a capacity of "less than" 1 cu ft, holds an 18-cube ice tray. Judson S. Sayre, Norge chairman, estimated it would take from three to five years to bring this type of unit into the home, following applications in hospitals, medical centers, boats, and doctors' or dentists' offices.



He's sweating out an algae problem

No wonder he's sweating—his office air conditioning broke down on the first hot day—and algae and slime were to blame. Right now he is trying to figure out how much the loss of efficiency and lowered output of more than 100 office workers is going to cost him.

Air conditioning systems can have some algae and still perform reasonably well under normal conditions. But when the temperature goes up, algae and slime reduce water flow and heat transfer, causing a shutdown.

Don't let this happen to your customers. Regular treatment with one of the Calgon algaecides will keep refrigeration and air conditioning systems free of algae and slime.

You have a choice of two types of algaecides. Calgon® Biocide RP is a very potent liquid which has *Reserve Power* for longer lasting protection and is most effective against green algae. Calgon Algaecide comes in pellet form and is especially effective against slime bacteria growths.

If the problem is water... CALGON HAS THE ANSWER

More than 35 years of experience with water problems of all kinds . . . research facilities dedicated to a constant search for better water treatment chemicals and methods of treatment . . . analytical service and expert technical advice for every customer . . . and a full line of products backed by the Calgon name . . . all these are at your service. Call on Calgon for help on any water problem.

Ask your refrigeration wholesaler about these quality Calgon products —Calgon Scale Remover, Micromet® Plates, Calgon Algaecide and Biocide RP, Banox,® Ice Machine Cleaners and Treatment, Gas Leak Detector. Each one is a leader in its field.

CALGON COMPANY
HAGAN CENTER, PITTSBURGH 30, Pa.

DIVISION OF **HAGAN**
CHEMICALS & CONTROLS, INC.

'Telethon' Contest Spurs Sale of New Control Valve

CHICAGO — "We are taking telephone orders for our new '900' expansion valve right in our exhibit booth; our salesmen are calling in from all over the country because of the contest we have going while the show lasts."

J. R. Warnock, marketing vice president of American-Standard Controls Div., told the NEWS that enthusiasm was so high among salesmen that several asked to be excused from attending the 15th International Heating & Air Conditioning Exposition to work on closing orders in their areas.

The 900 valve, described in an earlier issue of the NEWS, is termed "ideally suited for general replacement installations where space is at a premium."

Agreeing with a NEWS editorial which suggested that the industry might do well to make direct comparisons with competitive products and not to avoid talking about differences, the Controls Div. has listed, by name and model number, the expansion valves which the new 900 will replace. One sales promotion piece consists of photographic cutouts of several competitive valves and the 900, all swiveled at one point to show the compactness of the American-Standard product.

Speaking of the Controls Div.'s general plans, Warnock predicted that sales volume will almost double in the next two years. "We have many new things going for us; our engineers are developing products which, together with our present production, will allow us to make a greater impact at both the wholesale and OEM levels."

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

THE "TREASURE" OF THEM ALL. No other compressors or condensing units can match the all-around performance, dependability, and economy offered by Bendix-Westinghouse models. Prime reason is that we start with a sound and efficient design and then apply the most vigorous quality control program in the industry to every step in manufacture, assembly, and testing. Turn the page for a close-up look at some new condensing units.

Bendix-Westinghouse MOTOR COMPRESSORS

NEW!

BENDIX-WESTINGHOUSE

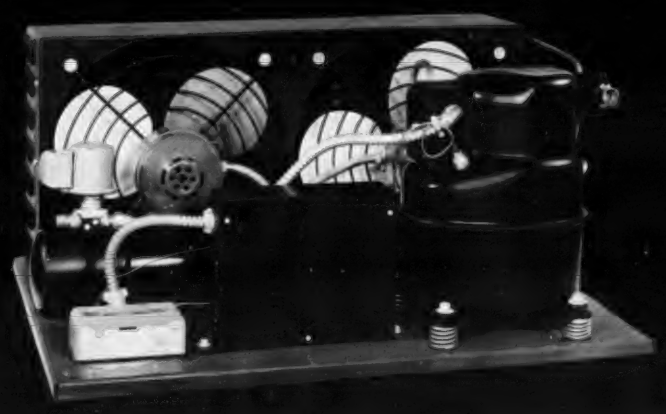
2- AND 3-HP R-12 CONDENSING UNITS

1-PHASE

OR 3-PHASE!

AIR- OR WATER-

COOLED



If you have a high back-pressure application—such as bulk milk coolers, water chillers, walk-in coolers, or air conditioning installations—you'll be particularly interested in the rugged new Bendix-Westinghouse condensing units.

Using R-12 refrigerant, these 2- and 3-hp condensing units are specifically engineered for just such applications. Their two-pole motor compressors save weight over standard four-pole units with the result that shipping costs are lower and required installation space is less.

Other advanced design improvements are many and include: latest-type motor insulation, full suction gas cooling, positive pressure lubrication, and inherent overload protection. They all add up to longer-lasting, quieter, more efficient operation. These units are available in either 230-volt, 60-cycle, 1-phase or 208/220-volt, 60-cycle, 3-phase models—air- or water-cooled.

Free literature on these new economy-minded Bendix-Westinghouse condensing units is yours for the asking. Write . . .

Bendix-Westinghouse

EVANSVILLE, INDIANA

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.; Peter A. Karl, Inc., Union Station Bldg., Utica 2, N. Y.; Sabal-Kielmann, Inc., 15 William St., New York 5, N. Y.

Dunwoody Industrial Institute Offers Air Conditioning, Refrigeration Courses for Trainees from All over the World

ANIL CHATTERJEE of Burma and Gasm El-Seed Ageeb of Sudan, test and adjust the capacity reduction controls on an air conditioning unit as Floyd H. Schneeberg explains the operation of the equipment during an instruction period at Dunwoody Industrial Institute in Minneapolis.

MINNEAPOLIS—More than 450 trainees from 48 countries have received advanced technical training at William Hood Dunwoody Industrial Institute in the past ten years.

Thirty-five international trainees are enrolled for the present school year; five of these are receiving instruction in the air conditioning department.

Dunwoody Institute, a privately endowed non-profit school, offers trade, industrial, and technical training.

The air conditioning department, headed by Floyd H. Schneeberg, offers a general air conditioning course, a refrigeration and appliance course, and a sheet metal course. The courses consist of 18 four-week units.

OVERSEAS PROJECTS

The school has long been interested in the international development of technical education. Its International Services Div., headed by Dr. K. N. Rao, administers a number of overseas technical assistance projects.

Dunwoody advisors assisted the Indonesian government in establishing the Indonesian Technical Teacher Training Institute at Bandung, Java.

In Burma, Dunwoody people are working both with the Rangoon Technical High School and with the Government Technical Institute in Insein.

Dunwoody assistance follows a pattern: participation by advisors in establishing the schools; developing curricula and preparing lesson materials; training teachers and counterparts both in the home country and in the United States; procurement and installation of specialized equipment; purchase of books, tools, and supplies necessary for efficient instruction.

Dunwoody's association with Lodhipur Institute, a mission school established in Shahjahanpur, India, is unusual. The Indian school, established in 1858, has a long history of offering agricultural and vocational craft training to rural and urban youth. Now developing a terminal program of industrial training, Lodhipur is adopting Dunwoody techniques and teaching materials to Indian conditions.

TRAINED TO TEACH

Isaac V. George, one of seven Indian teachers who received advanced skill training and special teacher training, and who is a graduate of Dunwoody, has returned to India to teach refrigeration at Lodhipur.

Financial assistance for the Lodhipur Institute and for the projects in Indonesia and Burma has been provided by grants from the Ford Foundation. In each case, Dunwoody has served as the cooperating institution with the Foundation and the recipient government or agency.

'Off-the-Shelf' Ductwork For World Markets

THE NEW "off the shelf" ductwork, announced by Pope Products Ltd., will help relieve a bottleneck in plumbing, mining, tunnelling, and other applications where ventilation ducts previously have been custom-made by small workshops on the job, according to Pope. Although the mass-produced ductwork was mainly designed for quicker and cheaper installation of Pope-Aire air conditioners, it will also be available to other users, and for export. Export inquires should be addressed to The Export Manager, Pope Products Ltd., Charles Road, Beverley, South Australia.

Thinking of—

- **changing territories**
- **expanding your territory**
- **taking on new lines—**

Check the

CLASSIFIED ADS

Your opportunity may be there.

INSTEAD, WE GIVE THEM MORE TO SELL, & MORE TO SELL WITH!

We don't preach growth, we practice it. Ask any Typhoon dealer. He'll tell you that he's making more profits today than ever before. Here's why. **28 New Units Added To The 1961 Line.** The greatest product range in Typhoon history...the broadest in the industry...to meet the demand for more specialized equipment. **Product scope.** A superior Typhoon unit for every need—a versatile solution for every problem in installation of air conditioners, furnaces, heat pumps. You sell the broadest line in the industry! **Customized Units.** At little or no extra cost, Typhoon custom-assembles its mass-produced components to your specific requirements. Because you save installation costs, you can sell competitively without sacrificing your profits! **Financing plans.** Less financial strain for you, simpler payment plans for your customers. Helps you stock and sell! **Sales incentives.** Exciting programs that offer bonus benefits for you and your family. **Planned progress.** For 1961, Typhoon dealers are following a complete "Prescription for Progress." National advertising. Local promotions. Specialized programs to make more profit from the Commercial, Industrial and Residential markets. Carefully planned. Skillfully executed...to give every Typhoon dealer the ammunition he needs to make more, more easily! All contained in a new sales kit! Study the facts and you'll agree: Typhoon dealers enjoy a considerable advantage in products, promotions and profits. Wouldn't you like to be one? For more facts and Reference Wall Chart on the complete line, use the collect telegram in this ad. Or call or write us.

WESTERN UNION
TELEGRAM

Collect

Typhoon Air Conditioning Division,
Hupp Corporation
505 Carroll Street
Brooklyn, New York

Rush me full details on a Typhoon distributorship.

(your name and address)

TYPHOON
HUPP

Air Cooled Remote Condensing Units 7½, 10 and 15 Tons

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1)

estimates of annual purchases).

He also has data on what each presumed salesman did "last month," and what each customer bought from him.

Utilizing this information, he can set prices and terms of sales; adjust his inventories; assign salesmen to call on particular customers; spend money on advertising, salaries, and inventory; hire and separate employes; and allocate managerial time to administration, credit problems, and employe training.

All six players feed their decisions into the computer, which already has digested data representing the quirks and buying habits of each customer, plus personal data on all player's salesmen.

From the characteristics of customers and salesmen, and of the deals offered (plus an allowance for the element of chance) the computer determines how much each customer would have bought from whom and at what price.

Then it prints out for each branch manager a profit and loss statement, a sales summary, credit and inventory reports, and a description of each salesman's performance.

Robert Sells, who fascinated "Dope" with this story, reports that results of these games come close to Amstan's actual business experience.

As an early result, branch managers have obtained a better—more profitable—customer mix.

Questions: Are salesmen calling on too few people or are they calling on the right accounts? How can cost of serving a customer be balanced against his revenue?

In future games, Amstan hopes that its branch managers will learn how to balance their accounts geographically, by size, and by industries.

American Standard also plans to use this game to tackle pricing strategies.

Another use for the game, Amstan finds, is to let potential branch managers have a go at it.

Results give top management a line on such juniors' abilities to think their way through a mature manager's problems.

They're Romping In Australia

Retail prices in Australia have risen 134 per cent since 1954, while average wages have risen 219 per cent, according to the Victorian Institute of Public Affairs.

Prices rose sharply in the early '50's, but slowed down from 1955 to 1959. Wage-leaps presaged improved purchasing power.

Subsequently: 50 per cent of householders in Australia now own automobiles—as compared with 25 per cent in the United Kingdom and 76 per cent in the United States.

In Australia, 33 per cent of the homes have telephones, against 21 per cent in the U. K. and 75 per cent in the U. S.

In Melbourne and Sydney 60 per cent of homeowners have TV sets and washing machines, 90 per cent have refrigerators.

In Britain, comparable figures are 60 per cent TV sets, 20 per cent washing machines, and 15 per cent refrigerators.

However, outdoorsy Australia compares unfavorably with most other countries in its record of deaths caused by motor vehicle accidents.

In 1959, this great nation suffered nine deaths for every 10,000 vehicles. Only West Germany with 18 deaths per 10,000 vehicles has a higher ratio.

France had the same rate as Australia, Britain had eight, Canada seven, the U. S. six, and New Zealand five.

Most important Australian statistic: Between 1950 and 1960 a round million migrants arrived from Britain, Italy, the Netherlands, Poland, Germany, Hungary, and Czechoslovakia.

Australia is headed for an economic BOOM which ought to last at least another hundred years.

Stories of the Week

Upon arriving home after a hard day at the office, an Organization Man issued these orders to his wife.

"Herewith my hat and coat. Please file them for future reference.

"Has dinner been finalized? If not, hold it in abeyance until further advised.

"One of my associates has furnished me with the formula for a revolutionary long, cool drink with the request that I research it and report by findings at the earliest opportunity. This project requires my immediate attention.

"Should you require my presence to discuss any other urgent problems in the meantime, feel free to contact me. I'll be in executive session in the games room.

"Be assured that I will alert you before completing this experiment, so that you will have ample time to bring your efforts to a successful conclusion, after which I will be happy to attend the regular meeting with you at our dinner table."

At a recent sales convention a sign reared up near the speakers' platform. It read:

"Do not photograph the speakers when they are addressing the audience. Shoot them as they approach the platform."

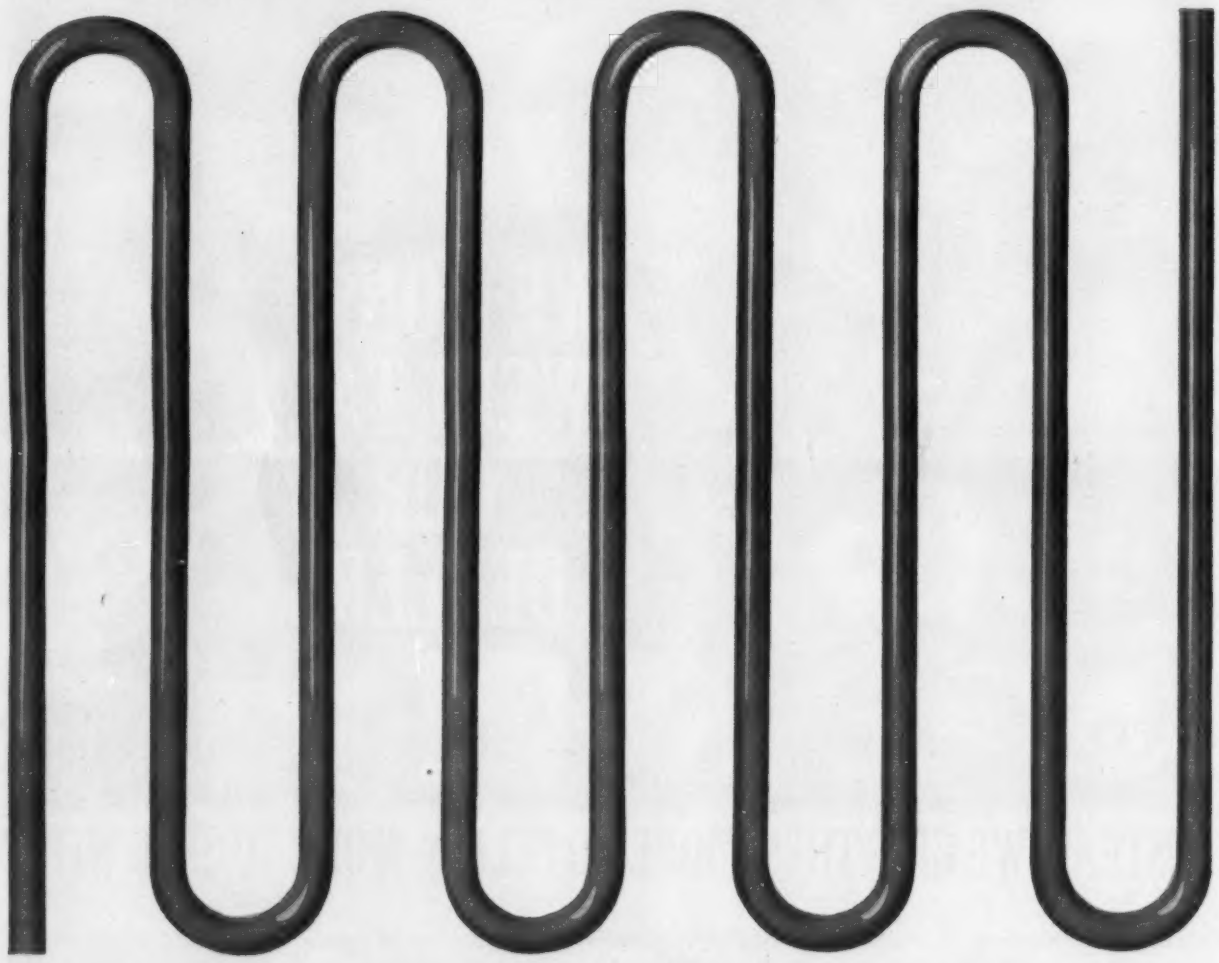
Quotes of the Week

In this day and age, when the accusation of standardization in our country is so justified, Americans need to cultivate the open mind. We should encourage departure from the norm, and those who assert their individuality should find tolerance from their fellows.—EDW. DURELL, *New Outlook.*

The greatest thing I have learned from youth is that they react to a person in direct ratio to the way they are acted upon. This is of course true of all people, but it is more so with youth.—WILBUR A. NORTH

Considerable good may come out of shooting men through space. For instance, earthlings might find one planet inhabited by people who have learned to live together in love and harmony, and be able to bring the secret back to us.—*Presbyterian Life.*

TURN TO ROCHESTER STEEL TUBING . . .



your #1 pipeline to FORMING FACILITIES

Lower cost without lower quality — that's what Rochester Steel Tubing's serpentine forming facilities offer refrigeration people. The secret is in our extensive and unique multiple forming facilities, coupled with tubing know-how. Result: lower cost, meaning real savings to you. Add to this Rochester Steel Tubing's rotary-straightening facilities and you get flat-as-a-pancake serpentines held to close dimensional tolerances. This speeds up wire welding for higher production and more savings. Such facilities and such care help give meaning to Rochester Reliability: to provide you with refrigeration tubing that works the way you want it to work for as long as you specify. More details? Write or wire Rochester Tubing Sales Manager.

GM

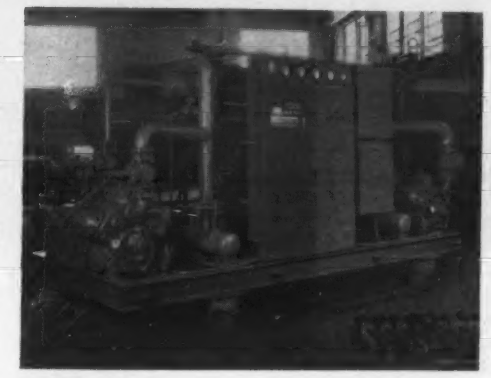
Rochester Reflects Reliability

GENERAL MOTORS

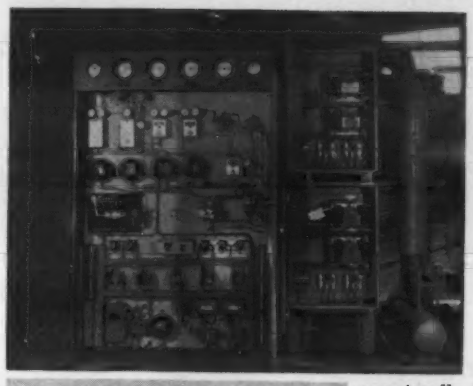
RP

STEEL TUBING BY ROCHESTER PRODUCTS

ROCHESTER PRODUCTS DIVISION OF GENERAL MOTORS, ROCHESTER, NEW YORK



VIEW of York's factory-assembled compound heat pump. "On the job, only electrical and water connections need be made."



CONTROL panel on the compound heat pump.

York Says

Compound Air-Source Heat Pumps Gaining Increased Acceptance

By Frank J. Versagi

CHICAGO—"Now entering its sixth year of use, the concept of applying multi-stage compression to air-source heat pumps, which York introduced, has received acceptance to a degree that amazed even those of us who originally predicted great things for it," Fred C. Wood, manager of air conditioning sales, York Corp., told the NEWS here during the recent ASHRAE semi-annual meeting.

York to date has installed over 13,000 tons of air-source heat pumps in over 50 large and small commercial applications, Wood explained, installations ranging from 50 to 2,000 tons' capacity.

"On the books are more than 2,000 tons currently being installed in some 11 applications."

Depending on system design needs, the compounding can be accomplished by reciprocating compressors, centrifugal compressors, or a combination of the two.

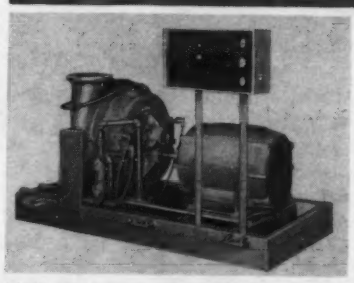
There is "almost no limit" in the capacity when using centrifugal equipment, according to the sales manager. "Alexanders department store in Long Island City has over 800 tons; Squaw Valley (scene of the 1960 Winter Olympics) exceeded that."

An air-source system is now being designed by York to handle a 1,400-ton load.

Quite popular, according to company spokesmen, is York's factory-assembled compound air-source heat pump. It is designed to be used in single and multiple installations giving a range from about 50 tons of cooling to more than 450 tons.

"The way is open for the air-source heat pump for jobs of the smallest capacity to the skyscraper office building. We cannot help but believe that the future is bright for all types of heat pumps, particularly the air-source type," Wood offered.

Wood also told the NEWS of a new series of heavy-duty, single-stage centrifugal compressors, the "Series T Turbomaster." The compressors are rated from 6 to 600 tons, depending on the refrigerant used and the temperature levels.



YORK Div.'s new "Series T Turbomaster" centrifugal compressor.

The Series T is offered for use with R-11, 114, 12, and 22. It can be direct driven by electric motor, steam turbine, gas turbine, or gas engine, and operates in a range of 800-7,000 cfm. Automatic pre-rotation vanes give wide range capacity control, York claimed.

Appeals Court Upholds Elgen In Patent Suit

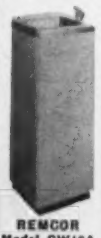
LONG ISLAND CITY, N. Y. —Elgen Mfg. Corp., manufacturer of "Silent Duct" and other products used by the heating and ventilating industry, announced that the U. S. Court of Appeals for the Seventh Circuit rendered a decision recently affirming the judgment of Feb. 17, 1960, of the Federal District Court at Chicago and holding U. S. Patents 2,777,573 and 2,825,384, both of which are owned by Elgen, valid and infringed by Grant Wilson, Inc., of Chicago.

Patent 2,777,573 relates to a prefabricated coiled product for use in making flexible connections for duct systems, and Patent 2,825,384 relates to a machine and methods of making such products, Elgen pointed out.

WATER COOLER
10 GALLON PRESSURE TYPE

*$139.50 *To Dealers Only

Attractive • Sturdy • Economical • Stainless Steel Drain Tap • Nickel Finished Copper Cooling Tank • ⅓ h.p. Tecumseh Hermetic Unit • Pre-Cooler • 5-Year Warranty on Refrigeration Cycle • Conforms to Government Specifications •



Remcor Products Co.
321 East Grand Avenue
Chicago 11, Illinois
Manufacturers of Water Coolers since 1941

REMCOR Model CW10A

Also 5 gallon Bottle Water Cooler—*$89.50

ALCO'S famous 402

THERMO® VALVES
The Small-Fixture Valve For All Fixtures

NOW AVAILABLE 2 WAYS

- With BUILT-IN PRESSURE LIMITING ELEMENT—to prevent motor overloading and motor burn-out—denoted by the letters P.L. as #402-2F-PL
- Without BUILT-IN PRESSURE LIMITING ELEMENT—for installations not requiring protection against motor overload—denoted as #402-2F

Field proven models for all these capacities:
REFRIGERANT-12
¼, ½ and 1 Ton
REFRIGERANT-22
½, ¾ and 1 ½ Ton
REFRIGERANT-40
½, 1 and 2 Tons

These are your benefits
√LIQUID CHARGE—Install in any position.
√WIDE RANGE SUPERHEAT ADJUSTMENT—2 to 20° F—Easy External adjustment fits Standard Service Wrench.
√REVERSE SEATING—Assures smooth feed at all loads.
√RUGGED CONSTRUCTION — Brass, Bronze and Stainless Steel.
√REMOVABLE STRAINER—At inlet—Easy to clean.
√CAPILLARY AT SIDE—Allows more head room for mounting.

IF THERE'S ROOM FOR YOUR HAND . . . THERE'S ROOM FOR AN ALCO 402

Call your Alco wholesaler—Write for Specifications

• BUY SECURITY
• BUY QUALITY
• BUY ALCO

8216

ALCO VALVE CO.
653 KINGSLAND AVE. • ST. LOUIS 5, MO.

The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors Solenoid Valves • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves

Modine Announces New Marketing Program Designed To Meet Wholesaler's Basic Needs

RACINE, Wis.—A new marketing program designed to meet the wholesaler's basic needs and which has radically changed the company's commercial terms of doing business is currently being offered by Modine Mfg. Co. here.

As part of this program, Modine has changed its discount terms and freight terms, has developed a uniform trade discount across product lines, and has tightened its established policy of selling only through wholesalers.

C. C. Wilson, Modine sales vice president, said the program is designed to sell through wholesalers, not to them.

"By selling to wholesalers and treating them simply as customers, we succeed only in filling their warehouses," he explained. "We want to sell through the wholesaler to get our products to the ultimate consumer.

"For this reason, the new Modine marketing program is designed to orient the manufacturer's business and the wholesaler's business to the benefit of the consumer—to make it convenient for the consumer to get the right product at the right time and place, and at the right price."

Modine's plan of action to fill the wholesaler's basic need embraces the following:

- A complete product line offered to wholesalers in four packages.

The four packages include:

1. Unit heaters including horizontal steam and hot water units, vertical units, industrial gas vertical heaters, duct furnaces, and duct blower packages.

2. Radiation heating such as baseboard, finned tube, and Type F convectors.

3. Steam specialties including traps, strainers, valves, and fittings.

4. Electrical products such as electric unit heaters, self-contained "AIRditioners," and exhaust fans.

In addition, Wilson said, Modine will cooperate with a wholesaler in the sale of any other product a customer may request.

- A new schedule of cash discounts with the most liberal terms ever offered by the company.
- Payment of all freight with products shipped F.O.B. the wholesaler's warehouse.
- Uniform discount structure across the entire product lines, saving the wholesaler time and trouble.
- An iron-clad rule to sell all designated wholesaler products exclusively through stocking wholesalers, whose number and type in a given area are fixed in relation to market potential.
- More than 70 qualified Modine representative organizations throughout the country to assist wholesalers. They do this by calling regularly on consulting mechanical engineers and contractors to help the wholesaler get his share of the larger jobs. They also supply literature; help check inventories; suggest ways to improve handling, storing, or carting procedures; and assist on take-off jobs.
- Incentive programs such as a current one offering a bonus for replacement unit heater sales.

Wilson pointed out that this new program offers benefits to the consumer through one source responsibility, local stocking and service, and having the right product available at the right time.

It also cuts wholesaler operating costs through one source responsibility, single invoicing, delayed billing, on the job training, better specifications support, and the new discount structures.

Wilson pointed out that Modine has more than quadrupled the number of products it sells exclusively through wholesalers.

Promotion kits have been prepared to cover each of the four product packages—unit heaters, radiation, steam specialties, and electrical products. The kits contain direct mail pieces, bill stuffers, catalogs, product literature, and bulletins pertaining to products in that category.

A comprehensive trade paper advertising program will be integrated with the overall program.

"Essentially, the objective of the new program," Wilson said, "is to insure coverage of all market areas — refrigeration and air conditioning, warm air, electrical, plumbing and heating. and industrial.

"We want to reach all these markets and at the same time effect a minimum or overlap."

Wilson commented that the new program incorporates the findings of three separate market-wholesaler surveys, all of which found that a successful marketing program must meet head-on the wholesaler's basic needs.

These needs include firm policy, freight allowances, discount structures, incentive program, local sales assistance, product acceptance, line completeness, personnel training, and merchandising programs.

WAGNER® MOTORS AT WORK

power to ventilate an air terminal

Quiet Wagner® polyphase motors drive air moving equipment at St. Louis' jet age airport

Keeping any building warm in winter and cool in summer is a demanding job. It's a demanding, king-size job in the 50,000 square foot Municipal Airport terminal in St. Louis.

Air movement in this architecturally renowned building is handled by five air supply fans and five air return fans. They're all driven quietly and dependably by Wagner* Type RP motors . . . five 40 hp motors for the air supply fans, and five 15 hp motors for the air return fans.

These open type polyphase squirrel-cage motors have the stamina to be perfect drives for fans, pumps, blowers and compressors. They operate for long periods without maintenance . . . efficiently produce power even under critical conditions. Compact and dripproof, they get the job done at St. Louis' jet age airport and in millions of other applications across the country. They can do a job for you. Your Wagner Sales Engineer will be glad to show you how. Call him. Soon.

Wagner Electric Corporation
6441 Plymouth Ave., St. Louis 33, Missouri
Branches and Distributors in all Principal Cities

Two of the five air return fans in the St. Louis airport terminal building. All five are powered by 15 hp Wagner Type RP motors.

WH61-A

Truck Refrigeration Unit Inventor Dies

MINNEAPOLIS — Frederick McKinley Jones, 68, vice president of engineering for Thermo King Corp. here, manufacturer of transport refrigeration equipment, died Feb. 21.

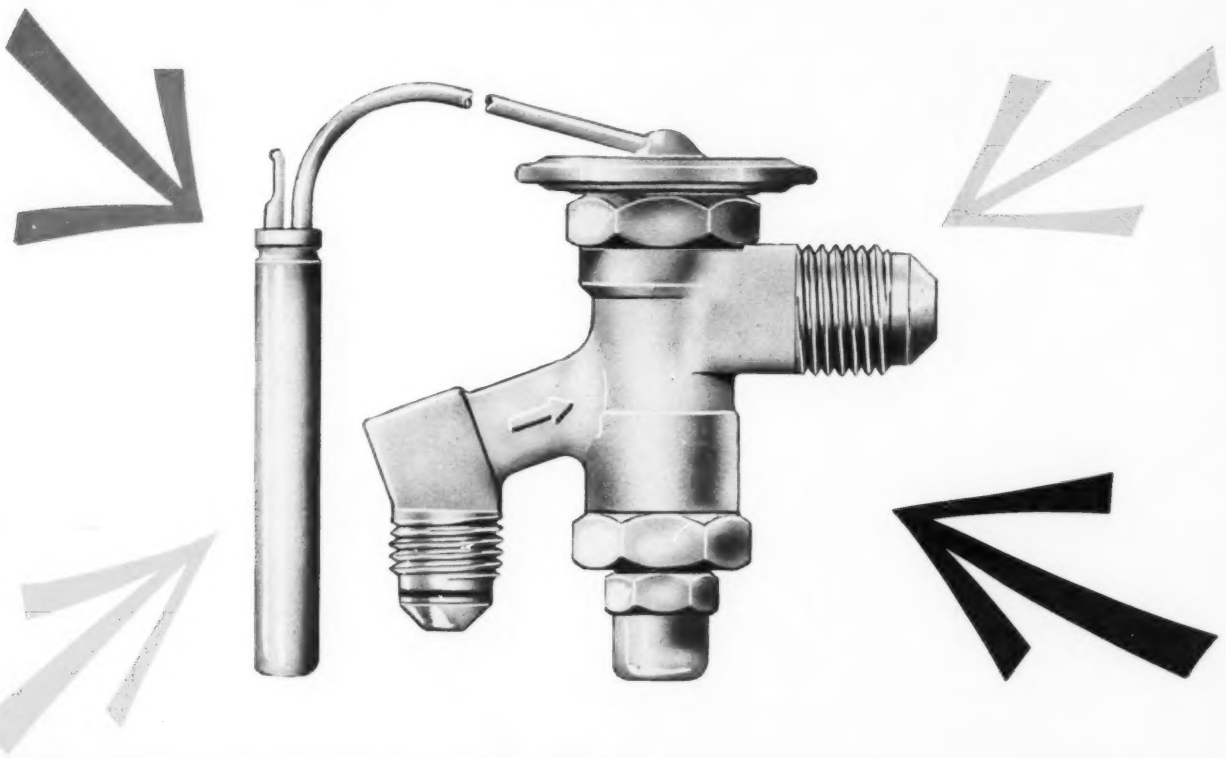
A self-taught Negro scientist, Jones was "a leader in the science of refrigeration and certainly one of the top engineers of his race," the company pointed out.

"He had more than 50 patents to his credit and invented the first truck refrigeration unit, which eventually was to make Thermo King a world leader in transport refrigeration."

Looking for a Business to Buy . . . ?
Check the Business Opportunities Section in the classified advertising columns.

YOUR WHOLESALER HAS THIS BRAND NEW

DETROIT VALVE



COMPLETELY INTERCHANGEABLE—SAVES SPACE, TOO!

Compact in size but with the capacity to do a big job! That's the description of the new Detroit 900 expansion valve. It is ideally suited for general replacement installations where space is at a premium. Inlet and outlet connections are in the same position as bulkier valves, allowing easy replacement without repiping.

There are only three moving parts! The valve is easily disassembled for inspection and cleaning without removal from the refrigerant line.

Also available externally equalized. Tons capacity: R-12—.5 to 3; R-22—.8 to 4.8.

LOADED WITH PLUS VALUE FEATURES

POWER ELEMENT – The small removable stainless steel power element is shielded-arc welded by specially developed equipment. In this design and method of assembly, full diaphragm flexibility is accomplished. The COMPACT CAPACITY line features long life and trouble-free operation. Available in Detroit custom "C" or "Z" charges. Also available with a built-in pressure limiting element to guard against motor overloading and burnout if required.

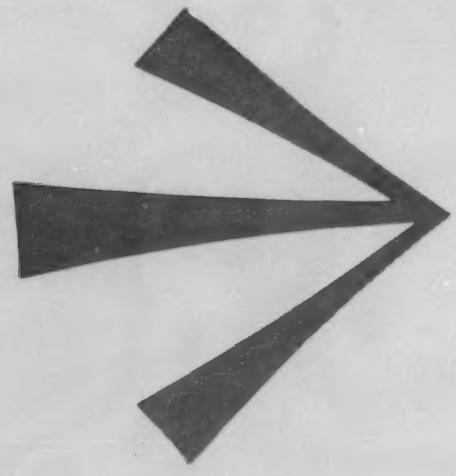
BODY – A high density brass forging. Inlet location, and minimum number of parts, allows full and free flow of refrigerant through the valve. This simplicity of construction provides high capacity for the small size.

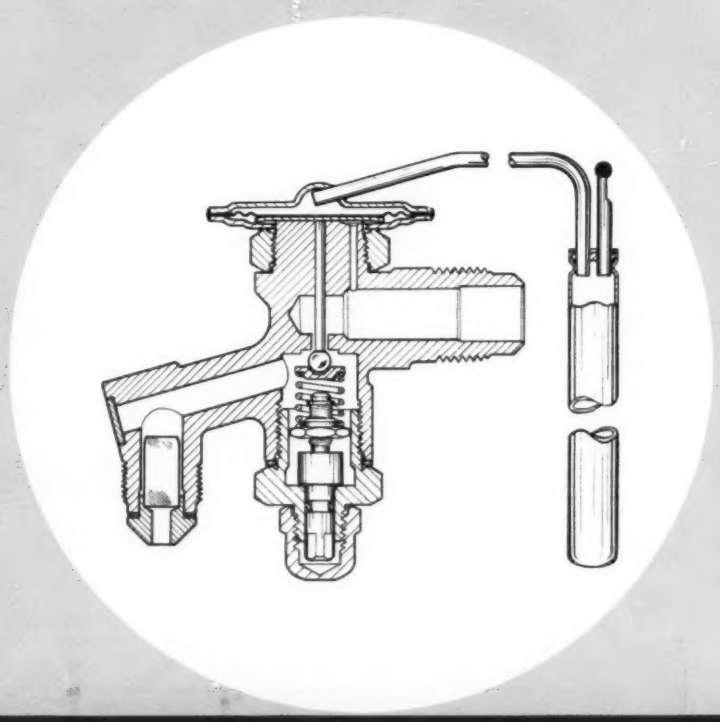
LARGE INLET STRAINER – Easily removed for cleaning–held in position by a retainer clip.

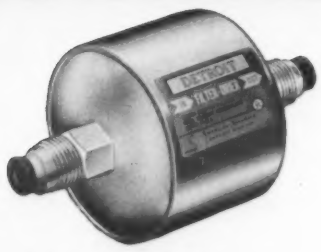
BALL NEEDLE AND PUSH ROD – Self aligning and self centering–seats perfectly every time. Ball is concentric to push rod.

ONLY THREE MOVING PARTS–Smoother operation and longer life. No clips, extra springs or miscellaneous parts.

EASY TO SERVICE–Valve easily disassembled for inspection and cleaning.







Filter Driers—Sealed Type
Filter Driers—Replaceable Cartridge Type
Expansion Valves with O.D. connections
Sight Glasses
Solenoid Valves
Strainers

See the "900" and other Detroit Refrigeration and Air Conditioning Products at your wholesaler today!

AMERICAN-STANDARD CONTROLS DIVISION
5900 TRUMBULL, DETROIT 8, MICHIGAN

AMERICAN-Standard
CONTROLS DIVISION

Bethlehem Steel Puts Heating, Cooling Plant Into a Glass and Steel 'Showcase'

BETHLEHEM STEEL recently put into operation a modern air conditioning plant to service a group of new office structures and a printing plant. A feature of this installation is the all-glass wall which permits an inclusive view of all the intricate equipment.

* * *

BETHLEHEM, Pa.—A modern central heating and refrigeration plant to serve the air conditioning system of the whole new General Offices, North group of buildings has been put into operation by Bethlehem Steel Co. here.

With a present capacity of 1,080 tons of refrigeration, it is capable of handling the needs of an already existing printing plant and a new office building currently under construction. Additional capacity up to double the present tonnage to take care of future construction will be provided as needed.

The brick and concrete one-story building is framed in exposed steel. An unusual feature is an all-glass west wall, forming an attractive showcase for the equipment. Color coded piping adds a splash of brightness to the picture.

The glass wall provides an unimpeded view to the onlooker. On his left he sees a large sphere, the high temperature hot water expansion tank. To the right of the sphere, in the center of the picture, are two high temperature hot water generators, one of which is visible as a large cube. The other is partially hidden behind the expansion tank and oil preheater equipment.

Each of these generators is designed for an output of 10,500,000 Btuh at 305°F, arrived at by boosting the boiling point through pressure control, a relatively new concept in water heating in this country, according to Bethlehem Steel.

At the far right of the building, looking like two cylinders placed one on top of the other, is one of two absorption refrigeration machines. The other is hidden from view. Process water for the plant comes from a well drilled on the premises.

Recold Appoints H. H. Schellhas To Eastern Post

LOS ANGELES — Recold Corp. has appointed Herbert H. Schellhas eastern district manager, according to C. M. Wilson, vice president.

Schellhas

Schellhas' appointment was described by Recold officials as part of a continuing program of expansion and consolidation to link the company's markets for commercial and industrial air conditioning and refrigeration equipment.

Schellhas, who will operate out of New York City, served nine years with Frick Co.; for two years, operated independently as Coldcraft Refrigeration, sales agent for Recold and other manufacturers; and in 1957, joined Hawk Engineering Co. as sales engineer, specializing in Recold equipment.

American-Standard Div. Appoints Robinson

DEARBORN, Mich. — Appointment of Fred J. Robinson as service manager has been announced by R. L. Bernhard, vice president, engineering, for American-Standard Industrial Div.

Robinson

Robinson had been service supervisor for the division prior to his promotion.

WITT REMOTE AIR COOLED CONDENSERS

With The Low Silhouette

Efficiency, economy, dependability—those three words most effectively describe the operation of Witt Air Cooled Condensers. Available in a wide range of centrifugal blower and fan type models, for single or multiple compressor installations, for indoor or outdoor applications, you'll find a Witt Air Cooled Condenser to handle any size air conditioning or refrigeration system. Winter control systems available for low temperature areas—multiple circuiting available at no additional charge.

Write For Complete Witt Catalog

A. H. WITT COMPANY, INC.
940 N. Sycamore Ave., Los Angeles 38, Calif.

Air conditioner makers cool off hot production problems with Anaconda Aluminum

Because most forming problems are eliminated in advance, climate control equipment manufacturers have specified Anaconda Aluminum for years. For instance, our tempered aluminum fin stock, with superior gauge uniformity and control grain size, provides fin durability and rigidity.

In addition, other manufacturing problems are being avoided with similar quality-controlled Anaconda Aluminum—coiled and flat sheet, tube and extrusions—for air conditioner back panels, housings, end plates, trim and other applications. Anaconda Aluminum is custom-produced—to reduce your manufacturing costs and improve your product performance. For more information ask your Anaconda Aluminum Company representative for our new "Mill Products Catalog" or write: Dept. AJ-2, P.O. Box 1654, Louisville 1, Kentucky.

ANACONDA ALUMINUM

Editorial

The Difference Between R and D

RESEARCH laboratories have been sprouting all over our nation in recent years. Huge corporations spawn them in the hope that they'll germinate new products. Such efforts are not folly, according to Lynn A. Williams, president of Anocut Engineering Co.

Nevertheless, results sometimes are more disappointing than encouraging for corporate investors. Historically, a much larger share of revolutionary product ideas have come from *outside* the comfortable walls of big organization endeavor.

Mr. Williams lists these blocks which limit creative personality in an Organization Man type research laboratory:

(1) Factories are centered around production, which must be planned. New ideas upset planning and warp deadlines.

(2) Organizationwise it is important to avoid mistakes. One bad part in 100,000 products can cause a giant headache. Radical changes almost surely will bring with them a multiplication of small mistakes.

(3) Most management executives won't put up with the disturbing aspects of a truly creative person. His irregular hours and habits are anathema to Personnel Chart daubers.

(4) Big corporations really don't need to innovate. When they do, they take risks which they can avoid by depending less on creativity and more on size, momentum, reputation, and huge advertising budgets.

Best creative work often is done by accident—and even by men not trained for the field in which they made their original contribution! Examples:

The dial telephone was invented by an undertaker, the safety razor by a traveling salesman, the pneumatic tire by a veterinarian, and color film by two jazz musicians.

If the director of a modern research laboratory had hired any of this motley crew to work on such projects he would have been adjudged insane by management consultants, and by management itself.

"A society of ants is efficient and orderly. But it is not creative," Williams observes.

"Corporations would do well to listen less to lawyers, who are more concerned about avoiding lawsuits than trying new ideas," he adds, "and tolerate more those difficult-to-organize screwballs on their payrolls who are ingenious.

"It is easy to avoid failure in dealing with new ideas," Williams concludes sadly. "All one has to do is reject them."

But that isn't the whole story. Today most corporate laboratories are labeled "R and D" (research and development). Actually, they are far more devoted to development than to research.

And most of our progress has come from *development* of an inventor's ideas (example: from Tin Lizzie to Thunderbird).

Research forages out into the unexplored space of new principles and new ideas. Without it, and without lonesome inventors, development couldn't get going.

Together, though, they account for progress.

A Suggestion for Unified Research

WHAT GOES on inside an operating hermetic condensing unit?

How many foreign substances are generated by the several materials present; are all such by-products harmful to the system?

We don't know. After all these years, we still don't know.

There have been theoretical dissertations. There have been accelerated life tests and sealed tube experiments. Measurements have been made by infrared spectrophotometry, electrolysis, mass spectrometry, vapor chromatography. Individual companies have spent tens of thousands of dollars on research.

But agreement among data has been slight, correlation hard to come by. Proprietary restrictions on the publication of findings has been a problem.

The practical result of this ignorance is that arbitrary and apparently pragmatic decisions are made on moisture limits, additives, lubricants, insulation, metals of construction, sealing rings, operating temperatures, non-condensables.

When a burnout occurs, when anything unusual happens in a system, 64 theories are offered in explanation.

Isn't it time to stop the erratic duplication of effort; time for an industry-sponsored unified project at some academic or commercial research organization? A research project which will:

a) spend a year or so on a thorough literature search;

b) select from the several investigative procedures those which are most likely to render comparable results, or

c) develop original procedures;

d) conduct continuous, programmed testing;

e) publish its findings.

The tests of a good society are its riches in human personalities and the chances it gives them for self-development. If democracy fails those tests it abandons its own foundations. The French revolutionaries attempted to establish the rights of man on reason alone, and planted the seeds of their own failure. They regarded the rights of the individual as derived from his utility to the state, and thus subordinated the man to the mass. So does socialism, so does communism, so does fascism. The only rights of the free citizen then become whatever the majority, or the leader, sees fit to allow him. When this happens, free government has swung full circle, and delivered the rights of man back to their original enemy—arbitrary power in any form which ignores the spark of Zeus of Jehovah in every man.—ALAN VALENTINE in *"The Age of Conformity"* (Henry Regeery Co.).

MORE ON ENGINEERS AND UNIONS

Minnesota Society of
Professional Engineers
St. Paul

Editor:

The results of the survey you quote show only that the drive which makes engineers spend years in acquiring education is a dissatisfaction with the world about them and a desire to improve these conditions. This dissatisfaction with a way of life is . . . the factor which makes America great. There is real danger when our leaders advocate taking this for "collective security."

Your editorial fails to distinguish between the Professional Engineer and those people doing related work (technicians, draftsmen, engineering aides, etc.). The statement, "the movement of professionals toward collective bargaining has begun," is contrary to fact. The large proportion of union membership is engineering personnel of a sub-professional level.

The dilemma presented graphically by Cliff Wirth's cartoon can be resolved by distinguishing the engineer as a "Professional Engineer" and elevating him above the dilemma by placing him in his proper place between labor and management.

ROBERT W. JARVIS, P.E.
President, Engineers-in-Industry Section

Editor's Reply:

In their attempt to keep engineering a truly professional occupation, the many state and the national societies of professional engineers frequently make the mistake of classifying everyone who is not a member as a "sub-professional." The classification is greatly resented by many highly professional employes of industry who, for one reason or another, have never taken registration examinations.

The Jan. 9 editorial stated, in effect, that due to an accumulation of dissatisfactions, engineering employes of industry are looking more favorably than before at the suggestions of organized labor. Some have looked and tried, and have come away. The important thing, however, is that **some are still looking.** And some people in management admit privately that they don't particularly care.

We suspect that by concentrating so much on registration as a criterion of professionalism, NSPE may be losing rapport with those very engineers at whom the unions are aiming.

So our conclusion still holds: **"The movement of professionals toward collective bargaining has begun. It is for management to decide whether the trend is beneficial and to act on that decision."**

Recold Corp.
Los Angeles, Calif.

Editor:

My sincere congratulations to you on your editorial in the Jan. 16 issue, "Exhibiting at a National Exposition Can Be Tediously Expensive."

As a manufacturer, Recold has become increasingly annoyed and disgusted at the exorbitant prices we had to pay for services—and the general attitude of "You Can't get anyone else—so wait your turn and like it!"

Your reference to "Transient labor obtained from union 'hiring halls' often is incompetent, unruly, indifferent, and even rebellious"—was timely, as well as your entire editorial on this subject.

It is my fervent hope and desire, with the cooperation of everyone concerned, to see to it that the 12th National Exposition Air-Conditioning Heating & Refrigeration Industry, to be held in Los Angeles, February 1962, will set an example of fair treatment to the people who pay the bill and tend to renew confidence to the exhibitions for our great industry.

H. T. JARVIS,
President.

AIR CONDITIONING HEATING & REFRIGERATION NEWS
F. M. COCKRELL, Founder

'The Conscience of the Industry'

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From the Files of the News

25 years ago . . .

The University of Illinois' Dept. of Mechanical Engineering will conduct a two-day conference in May on air conditioning, where clarification of the term "air conditioning" will be considered as well as explanations of the functions and limitations of available equipment; F. C. Houghten, director of the ASHVE research laboratory, Pittsburgh, will speak on "Comfort Conditions and Physiological Factors."

Installation of a ¾-ton Westinghouse air conditioning system in the testing division of United Electric Controls Co.'s Boston plant has made possible more accurate calibration of thermostats, speeded production, and lowered operating costs, according to B. W. Dezotell, company president.

York Ice Machinery Corp. has just introduced a new portable air conditioner, its second, with hand operated pump-out damper to freshen room air whenever smoke or odors accumulate, with increased cooling capacity, and with optional functions of heating and humidifying in the winter.

During 1935, 68 homes were air conditioned in St. Louis, which continues to lead the country in residential cooling. The city's total of air conditioned homes reached 196, or 40% of the 508 installations of all types made to date in that city.

Air conditioning installations in Cincinnati for 1935 totaled 96, bringing the city's all-time total to 149; and in Toledo 26 air conditioning installations has been reported.

A 12-story apartment building in New York City will have individual controls in each of its 44 air conditioned apartments—a new first for apartment buildings of this size.

10 years ago . . .

A unique salvage operation using Carrier refrigeration and dehumidifying equipment has saved a Michigan State university collection of 500,000 books from water damage. The water seeped into the university library as tens of thousands of gallons were poured on a $5 million fire in an adjacent building. Lansing's Garlock Sales Co. installed the emergency dehumidifying equipment while the fire still raged.

Bronx burglars placed a safe containing $5,000 inside a large refrigerator to deaden the sound, exploded it, and leisurely removed its lucrative contents—another sample of how refrigeration can be profitable.

U. S. troops in the Far East are getting whole milk, thanks to three step refrigeration in a new recombining process. Refrigeration is employed to freeze butterfat used in the process, during pasteurization, and while bottling.

Cornell university researchers have found that cut flowers may be held for several weeks in moisture-proof packages without water if the temperature is maintained at 30° to 32° F. with proper air circulation.

To protect workmen from escaping gas, vapor, or mist involved in open-surface tank operations, a new American Standard Safety Code has been approved by the American Standard Association.

The NEWS reported in detail the debate held in Chicago recently on whether or not Chicago needs legislation to limit use of water in air conditioning systems. "If air conditioning installations in the Loop area should continue to increase at the same rate . . . by 1960 we would have 50,000 tons of equipment requiring up to 108 million gals. of water on hot days . . . add this to domestic consumption and total usage could be 138 million gals. per day. . . . Water is plentiful, but . . . sewers are inadequate," city officials argued. Industry representatives pointed out that installation of conservation devices on existing systems would be difficult and that air conditioning used only 26% of metered water, which was only a fraction of all water used.

Proper ventilation following an atomic blast, how effective air conditioning is in post operative care, the importance of protecting workers from excessive heat, and the general field of comfort cooling were discussed at a symposium on "Man and His Relationship to Air" conducted during the 57th annual convention of ASHVE in Philadelphia.

Amana Names Outlets In Two Areas

AMANA, Iowa — Amana Refrigeration, Inc. here, has announced the appointment of J. B. Charters, Inc., Detroit, as an Amana distributor in Metropolitan Detroit and the eastern half of Michigan.

At the same time, Amana announced the appointment of Modern Distributors, Inc., Oklahoma City, to distribute all Amana products throughout Oklahoma, with the exception of three counties.

Illinois RSES Assn. Will Meet April 7-9

MATTOON, Ill. — The 19th annual convention of the Illinois Association of the Refrigeration Service Engineers Society will be held here April 7-9, it has been announced by William Beshekas, president, and Levit W. Singleton, general convention chairman.

The convention program includes educational sessions to be addressed by outstanding speakers in their fields, it was stated. Also scheduled are a banquet, entertainment, and dancing Saturday evening, April 8.

Further details may be obtained from Beshekas (3545 S. Morgan, Chicago, phone: LA 3-8900 or Browning 9-5643) or Singleton (609 S. Lincoln, Robinson, Ill., phone: 1036).

Cuisine Exquise . . . Dans
Une Atmosphère Élegante

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EASY TO MAINTAIN

THE McQuay HOT ROD ELECTRIC DEFROST UNIT COOLER

The McQuay Hot Rod Electric Defrost System offers you automatic defrosting, completely safe and dependable for every application. Exceptionally simple and foolproof in its construction and operation, the "Hot Rod" system is designed to meet your every requirement at your kind of price.

All models of the Hot Rod unit cooler feature casings of hammered aluminum, and are equipped with built-in heat exchangers. A direct metallic contact between the heating elements and aluminum fins, means more complete, trouble free defrosting without wasting heat. The aluminum drain pan is heated electrically for positive de-icing.

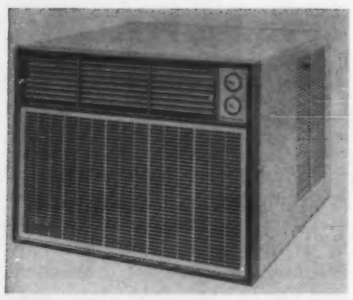
There are nine sizes of McQuay Hot Rod systems, ranging in capacity from 3,000 to 32,000 Btu/hr at 10° T.D. See your McQuay wholesaler, or write McQuay Inc., 1607 Broadway St. N.E., Minneapolis 13, Minnesota.

Fully automatic Hot Rod System Unit Cooler defrosts at predetermined intervals.

8 SIZES
3,000 to 32,000 Btu/hr at 10° T.D.

McQuay means Quality

McQuay INC.
AIR CONDITIONING • HEATING • REFRIGERATION

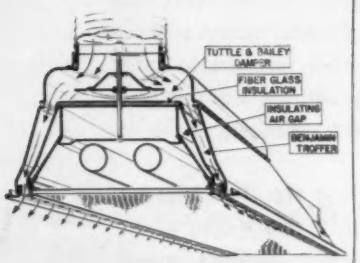


Window Unit Provides 23,000 Btu of Cooling

● Called the "250 Series Air Command," a window air conditioner providing 23,000 Btu cooling capacity, the highest ever offered by Amana room air conditioners, has been developed by Amana Refrigeration, Inc., Dept. AH&RN, Amana, Iowa.

The unit can be installed in double-hung windows as small as 28 in. wide. An 8-position, extra-sensitive thermostat, large cooling coils, Amana "Silent-Aire" turbine for quiet operation, and a zinc-coated virtually rust-free steel, are other features of the new window air conditioner line, according to the company.

Specifications include the following: Fan motor hp, ¼; voltage, 230; amperage, 13.5; wattage, 2,850; cfm, 600; height, 20 in.; width, 26½ in.; depth, 30¼ in.; net weight, 240 lbs., according to the manufacturer.



Air Handling Troffers Use 'New Concept'

● What is said to be a "completely new concept in air-handling troffers" called "Triple-Shell Lumi-Flo" has been announced by the Benjamin Div. of Thomas Industries, Inc., Dept. AH&RN, 207 East Broadway, Louisville, Ky., and Tuttle & Bailey, Div. of Allied Thermal Corp., Dept. AH&RN, 215 Warren St., New Britain, Conn.

The units provide light, cool air, or warm air from a single concealed ceiling fixture. They are said to be adapted for use in offices, institutions, stores, laboratories, schools, hotels, and restaurants—"to almost any type of building old or new with any type of drop ceiling."

"The air passageway is completely isolated from the troffer housing by fiberglas insulation and an insulating air gap—thus removing the possibility of temperature variations affecting the light output of the unit," it was pointed out.

Air-handling capacity of the new units is from 0 to 200 cfm from a single 1 by 4 or 2 by 4-ft unit, it was indicated.

Tuttle & Bailey has developed a new line of diffusing dampers to reduce sound levels, increase efficiency of the units, and avoid pressure build-ups, the announcement said. The Benjamin troffer units "feature a new shallow depth of only 4⅞ in. at the ends of the unit in order that beams and pipes in the plenum may be easily cleared."

Installation time is said to be reduced by use of the Tuttle & Bailey snap-in damper assembly and also by employing the Benjamin side-mount hanger which "eliminates the necessity of overhead yokes and supports."

Air Handlers Offered with Accessories

● A complete line of accessories for use with its floor-mounted and horizontal types of air handlers is now being offered by Halstead & Mitchell Co., Dept. AH&RN, 705 Bessemer Bldg., Pittsburgh 22, Pa.

The 16-model line for centralized conditioning is available in capacities ranging from 880 to 47,500 cfm. Filter sections for high or low velocity are available. Cleanable or throw away filters may be used with either type section.

Face and by-pass dampers and mixing boxes, with or without dampers, also may be added to the units. Directional discharge, either vertical or horizontal, may be specified.

H&M air handling units may be used with chilled water or hot water coils, steam coils, or direct expansion coils with a capacity range from 3 to 92 nominal tons under standard conditions.

Variable pitch sheaves also may be specified to add flexibility of air delivery. A choice of fins, either aluminum or copper, is offered. Fin spacings also are optional with 6, 7, 8, or 10 fins per inch. Spray or steam grid humidifiers may be added as desired. Vibration isolators are optional on all models.

ONE of 16 Halstead & Mitchell air handlers now being offered with a complete line of accessories.

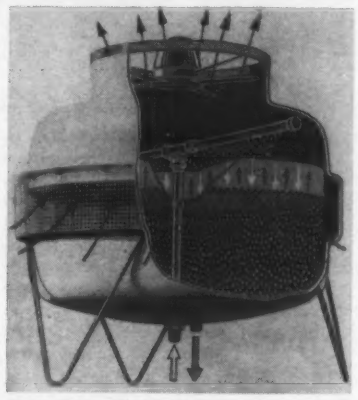
Tower Uses New Heat Transfer Means

● A new type of self-contained cooling tower, made of corrosion-resistant reinforced glass fiber plastic material, is being manufactured by Escher Wyss G.M.B.H., Dept. AH&RN, Lindau Bodensee, German Federal Republic.

Special construction has been made possible due to the use of a new heat transfer medium, developed and patented by the Swedish inventor Carl Munters, it was pointed out.

Towers are made in standard sizes ranging from about 80,000 Btuh to 5,000,000 Btuh when cooling the water from 88°F to 79° at a wet bulb temperature of 64°, according to the company. All axial fans used in the towers are of aerodynamic design and have a "very low noise level," it was stated.

Explaining tower operation, the firm said the heated water enters the cooling tower through the vertical pipe in the center and is evenly distributed by means of a rotating arm over the fill material.



Air at outside temperatures is drawn through the grille at the circumference of the tower and passes in counterflow against the continuous thin down-passing waterfilm.

Light weight of the towers makes them easy to install without special foundations inside and outside on buildings, even on roofs without any structural changes.

. . . a line of industry-wide favorites, built to make tough applications seem easy

When it comes to building electric motor-powered equipment, *make sure of your horsepower source.* Before you specify any motor brand, consult with your A. O. Smith Motor Man. He'll show you how the horses of A. O. Smith (a full line of integrals and fractionals both polyphase and single-phase) help users surmount application barriers.

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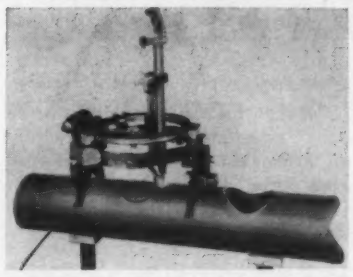
Hole Cutter Claims Economy, Simplicity



● Model ST hole cutter, claimed to be "a greatly simplified and much less expensive machine" for cutting 90° holes in pipe, tanks, and flat plate, has been announced by Steffan Mfg. Corp., Dept. AH&RN, 1585 S. Lincoln Ave., Salem, Ohio.

Three sizes permit cutting perpendicular holes up to 18 in. in diameter without cams, patterns, or layouts, the company said. It is a lightweight machine that may be used with electric drive or may be completely hand operated in the field. Cutting is accomplished with an oxygen, acetylene torch arrangement.

"Edges are clean, burr-free, and have excellent weldability," it was stated. "Grinding is not necessary as little slag is accumulated. The machine is powered through its cycle with a variable speed electric motor at the correct speed relative to the thickness of the metal. When operated by hand, cutting speed is controlled by the operator."

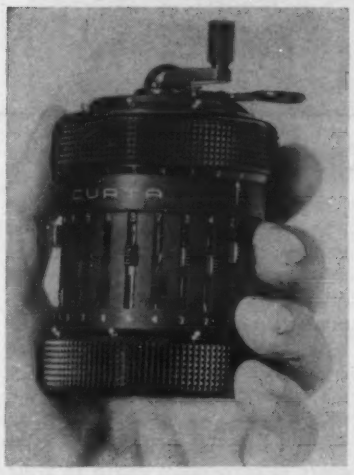
Sequence Control Is For Electric Furnaces

● A new type of sequence control for electric heating furnaces has been introduced by Controls Co. of America, Dept. AH&RN, Schiller Park, Ill.

Thermal rods instead of bi-metal strips provide the necessary time delay in turning on the different heating elements one by one, the company said.

"The stainless steel thermal rod is heated by a small electric coil activated by the room thermostat," it was explained. "As the rod becomes elongated from the heat it closes a switch on the main heating circuit. By varying the current in the small heating coil or the insulation between heating coil and thermal rod, a wide variance in time-delay can be obtained. The control is furnished in modules corresponding to the number of heating elements in the furnace."

Calculator Offers 'Accuracy, Portability'



● The Type 2 Curta calculator, a new lightweight calculating machine has been introduced by the Curta Co., Dept. AH&RN, 14435 Cohasset St., Van Nuys, Calif., for architects, contractors, estimators, and field engineers who require a precise "on-the-spot" answer for mathematical operations.

"Combining the accuracy, speed, and versatility of a large desk calculator with the portability of a pocket slide rule, the Curta has a capacity of 11 digits on the keyboard, 8 digits on the indicator dial, and 15 digits (corresponding to 999 trillion) in the answer dial," it was pointed out.

"Precision made of stainless steel and high grade anodized aluminum alloys, the Curta is 2 1/16 in. in diameter by 3 3/8 in. high and weighs 12 oz. Easily held and operated in one hand, the Curta is noiseless in operation, and rust and corrosion-proof."

More details on the products described on these pages may be obtained by writing the manufacturer at the address given in each story.

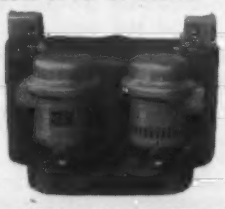
A CASE IN POINT

THIS MAN CHANGED HORSES

Mr. V. F. Radde, President of Skidmore Corporation, reports, "Our condensate pumps are invariably located near boiler rooms and frequently in an atmosphere full of dirt and coal dust. This A. O. Smith motor is the *only* capacitor start motor we've found that we can use in this kind of service."

Sure, we asked Mr. Radde for this testimonial . . . because we knew he had changed horses . . . switched to A. O. Smith motors because of troubles he had experienced with other makes. And more important, he was glad to do so because the sealed-capsule motor had eliminated his problems. In contrast to every other make, the canopy housing totally encloses the starting capacitor, mounting switch, actuator and automatic overload protector from insects, coal dust, dirt and other impurities.

Furthermore, in addition to superior mechanical features, it's a motor designed specifically for centrifugal pump operation . . . higher performance at full and service-factor loads means higher performance for your pump. It adds up! Mechanically and electrically, you get more motor from the same sales dollar when you put your money on the horses of A. O. Smith.



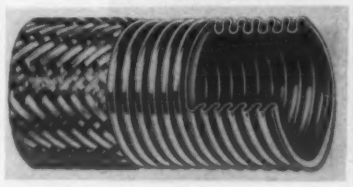
GO-TOGETHERS — Dependable Skidmore condensation pumps powered by A. O. Smith vertical close-coupled pump motors.

Starter Is for Use With Small Motors

● Designed for use with fractional horsepower motors, a new Class 10 starter provides manual, across-the-line, start-stop or off-on control of fractional and 1-hp single-phase electric motors, according to Furnas Electric Co., Dept. AH&RN, 1111 McKee St., Batavia, Ill.

Single and two-pole devices include a built-in trip-free thermal relay to protect the motor from sustained overload. Two pole starters are required to break both lines for direct current applications, and are recommended for all severe AC applications. Incandescent or neon pilot lights to indicate operational status and toggle guards which will accept a padlock are optional equipment.

Two starters or a starter and a toggle selector switch in a single enclosure are also available. The toggle selector may be combined with a manual starter and a pressure switch thermostat or other automatic sensing device. The toggle selector switch is used to connect the circuit for either manual or automatic operation.



Improves Line of Flexible Metal Hoses

● "Hi-Flex" is the trade name of a new Flexonics metal hose line that incorporates unusual improvements in flexibility, pressure ratings, fatigue life, and ease of cleaning, according to Flexonics Corp., Dept. AH&RN, Bartlett, Ill.

"The hose has been specifically designed for the 'more exacting applications' in the industrial field in both maintenance and original equipment, and will have interest to the aeronautical and missile fields for such applications as hydraulic, pneumatic, and cryogenic lines," the company stated.

Hi-Flex is offered in sizes from 1/4 to 1 1/4 in. helically convoluted, braided or unbraided. Suggested working pressures in the 1/4-in. size is as high as 4,500 psi with static bend radius of 1.03 in., the company said.

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TECH CENTER

by

FRANK J. VERSAGI

Open-Type vs Hermetic Compressors: Round 2

Even while the NEWS is carrying a series of articles by York's vice president Floreth predicting the demise of the open-type compressor, we are receiving comments supporting the open-type because of its performance, its reliability, its long life, and its low service costs.

A recent Tech Center reviewed the findings of one supermarket which found an open-type compressor definitely superior to one semi-hermetic, although it was also definitely inferior to another semi-hermetic.

Today's discussion centers around an exchange of letters generated by another supermarket's experience which was discussed in the "Owner's Report" series.

D. Hiel, commercial sales supervisor for Frigidaire Products of Canada, Ltd., wrote us, "With much interest we have read your report on the 107-store supermarket chain in your Dec. 12, 1960 issue.

"However, there is one thing we fail to understand.

"In the bottom part of the second column on page 33, reference is made to the decision 'to go air-cooled.' Question — What has this to do with sealed units or belt-driven units?"

To get the answer for Mr. Hiel, we went back to our original source, and he said:

"The Btu output, the rating, of an open-type unit run air-cooled would be so low as to be economically impractical. To accomplish the same total refrigeration would require many more machines than are required when semi-hermetic units are employed.

"Basically, it must be remembered that on a belt-driven unit the motor is used to drive both the compressor and the fan; on a hermetic unit the motor compressor is separate from the condenser fan.

"It would be unthinkable to employ open-type units in an air-cooled application."

A few days later Hiel submitted a detailed rebuttal. He starts out modestly enough, "I am hesitantly admitting that the reasoning as given by your source is beyond me."

Then he gets down to cases.

"Comparing '3-hp' sealed and open-type Frigidaire units, which should be representative for the industry, I note the data in the table above. (CAV model is the sealed compressor.)

Model #	Btuh	Watts	Condensing Pressure
CAV-300	24,500	4,100	174 psi
CAK-300/AD6 300	20,900	3,410	191 psi

"In either case, suction temperature is +20°, ambient is 90°.

"A demand for 4 or 5-hp open-type air-cooled condensing units would seem to be easily met by any compressor manufacturer.

"Here in Canada, we have sold equipment to over 300 supermarkets since the war and also have our dealers and distributors look after the installation to our specifications.

"It is interesting to note, too, that two of the largest supermarket food chains in this country, which have their own engineering and service staffs and operate over 250 stores, have been using open-type air-cooled condensing units for over five years.

"Of course, there will always be differences of opinion, but it is our own firm conviction from experience that open-type units with their higher initial cost easily beat sealed units in three ways—less breakdown, easier and faster to service, more economical when including cost of service over a number of years," Hiel concludes.

If you disagree, we'll be happy to include your comments in Round 3!

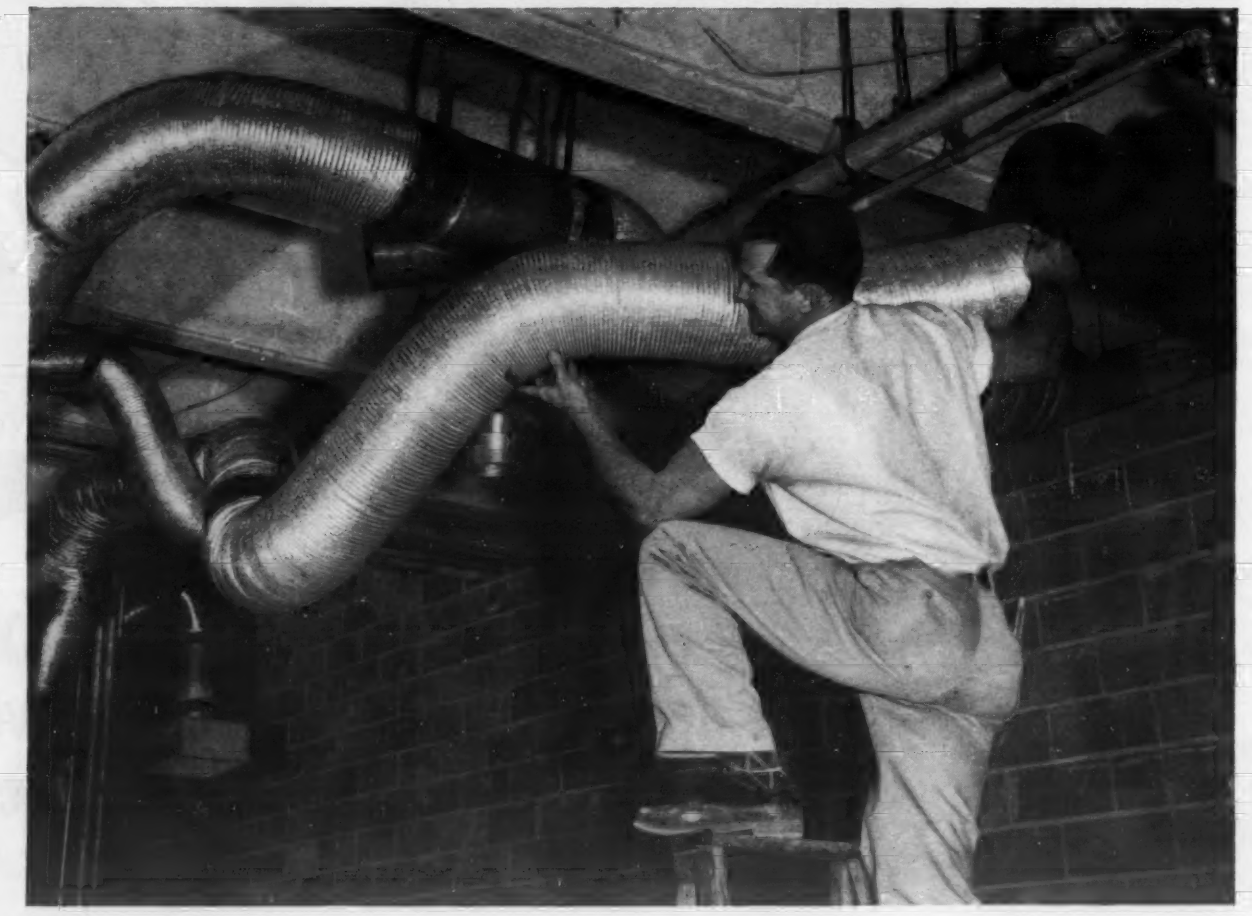
SORRY!

REQUESTS are pouring in for more information on the three compressors which were compared in a recent Tech Center.

The company supplying the data requested complete anonymity and released the information only on condition that the NEWS story would not make possible the identification of brands, and we must continue to respect the confidence placed in us by our source.

"The important thing is for users to realize that such testing can be done and to run their own experiments. We have decided tentatively that many published ratings are inaccurate," our source says.

Lightweight, flexible Thermaflex® saves you up to 32% on installation costs!

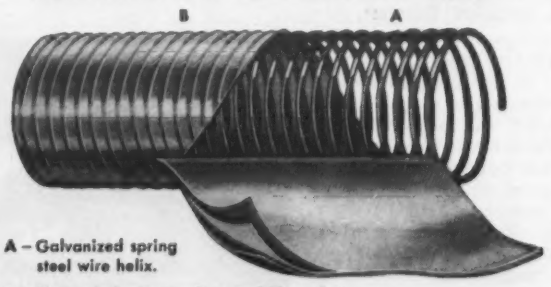


Here's the new-type flexible duct especially designed for run-outs in both high-pressure and low-pressure air conditioning systems. Thermaflex is lightweight . . . easy to carry, handle. Thermaflex is highly flexible . . . goes around corners, through tight passages. Result: Thermaflex can save you 25% to 32% over rigid and nonrigid metallic duct on installation costs!

What's more, Thermaflex is flame-resistant, moisture-resistant . . . reduces vibration and noise . . . offers great airflow efficiency. Unlike other nonrigid ducts, Thermaflex is permanently bonded to wire reinforcement. Thermaflex materials are approved by Underwriters' Laboratories.

Thermaflex is a product of Flexible Tubing Corporation, leading manufacturer of nonmetallic duct. Write today for the name of the authorized Thermaflex representative nearest you. He'll be glad to show you how lightweight, long-wearing Thermaflex can save you time and money.

THERMAFLEX-A IS PERMANENTLY BONDED!



A – Galvanized spring steel wire helix.

B – Three-ply laminate of treated fiber glass between 2 flexible metallic sheets.

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API Research Program Aimed At Improved Oil Heating Equipment

CHICAGO — A far-reaching program of research, directed toward new and improved equipment using distillate fuel, has been launched by the American Petroleum Institute.

The new program constitutes a major effort in the oil industry's drive to improve the convenience and appeal of liquid fuel in heating the nation's homes, according to the API.

The over-all objectives of the new research program are to develop, interpret, and disseminate new technical information that will assist manufacturers in providing improved equipment using distillate fuel.

This step to expand fuel-oil markets was authorized by the API board of directors meeting here. The research program will be initiated in 1961 under the direction of the API Div. of Marketing. Under the program, cooperative efforts of the entire oil industry will be integrated by top industry specialists in fuel-oil combustion.

In a report to the API Fuel Oil Committee, J. L. Minner of Shell Oil Co. described the background and plans for the new research program, which he called "an investment in the future of oil heating."

Minner is chairman of the Research Subcommittee charged with the over-all planning for the program, as part of the API's broad effort in expanding fuel-oil markets.

Minner outlined the several areas of activity incorporated in the program to aid in the development of improved distillate consuming equipment. The program will:

1. Search for new principles in fuel-oil combustion.
2. Search for greater understanding of combustion principles, both new and old.
3. Search for ways of exploiting these principles.
4. Demonstrate principles in bench-scale or prototype equipment.
5. Interpret research results in terms of their practical application to combustion equipment.
6. Solve problems which present major obstacles to development of new equipment.
7. Communicate needed information to developers and manufacturers to stimulate final development and commercialization of equipment.

"Research will be undertaken under the API program only in those areas in which needs are not likely to be met by independent efforts of manufacturers," Minner said.

"Activities in the API program will be carried to the point of demonstrating principles, but not to the point of providing final equipment design. Manufacturers will be encouraged to complete the development of final details, leading to the introduction of new commercial products."

To provide full-time assistance to a Technical Advisory Group in the coordination of all elements of the research program, David W. Locklin of Battelle Memorial Institute will be retained as consultant.

January Gas-Fired Residential Boiler Shipments Jumped 31% over Last Year

NEW YORK CITY — Manufacturers' January shipments of gas-fired boilers for residential hot water and steam central heating systems jumped 30.9% above the volume reported for the same month a year ago, the Gas Appliance Manufacturers Association reported.

Edward R. Martin, GAMA's director of marketing and statistics, said that the trade association's monthly telegraphic survey of manufacturers revealed that 8,931 boilers were dispatched, compared to 6,821 units reported for January, 1960.

Factory shipments of forced warm air and gravity-type gas furnaces for the month totaled 59,200 units, 0.8% less than the 59,700 furnaces sent to market in January of last year.

Sales of conversion burners showed a 9.9% decline for the month. The comparable totals were 6,400 this year and 7,100 last year.

Combined shipments of the three types of gas central heating equipment totaled 74,531 units, 1.2% more than the 73,621 dispatched in January, 1960. The manufacturers also shipped the following:

Vented recessed wall heaters—26,800 units dispatched in January, 0.4% more than the 26,700 heaters reported for the same month of last year.

Room heaters and other types of gas direct heating equipment—38,400 units, a drop of 7.5% below the 41,500 sold in January, 1960.

Gas floor furnaces—4,500 units, a jump of 21.6% above the January, 1960 level, 3,700.

Gas unit heaters and duct furnaces—sales of this equipment fell 5.5% below the year-ago pace. The totals were 12,100 this year and 12,800 last year.

Connor Bulletin Covers Kno-Draft, Dorex Lines

DANBURY, Conn. — Connor Engineering Corp. here offers a new four-page Bulletin 31F, which describes and illustrates representative models in the "Kno-Draft" lines of linear, square, rectangular, and circular ceiling air diffusers, grilles and registers, high velocity equipment, and the "Dorex" line of air recovery and purification cells and canisters.

Recent additions to the "Architects' Group" of rectilinear diffusers are also introduced.

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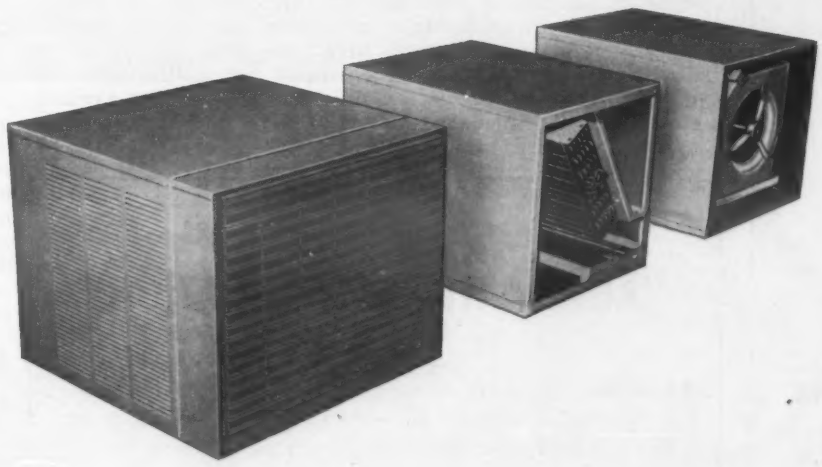
Perfection Heat Pumps are *true* heat pumps — not reverse cycle air conditioners. Each inside coil has an extra row of oversize tubes to provide full capacity on the heating cycle. Perfection Tri-Pak Remote Heat Pumps (like the one shown) fit any installation requirement. Indoor coils and air handlers can be combined to provide any air travel required — vertical or horizontal, up or down, right-to-left or left-to-right. Saves time and cost in any installation. Easy to handle and service. And, Perfection Tri-Pak Air Conditioners give you the same kind of flexibility. Both heat pumps and air conditioners are available in 2, 3, 4 and 5-Ton capacities to give you a model for any job. Complete selling flexibility? You bet!

Perfectionists are a select group of distributors and dealers. Want complete details? Write Perfection Division, Hupp Corporation, 1135 Ivanhoe Road, Cleveland 10, Ohio.



PERFECTION

Conclusions and Findings from ASHRAE Technical Sessions, Symposia (2)

By
George M. Hanning
C. Dale Mericle
Frank J. Versagi

The NEWS fielded a team of five editors to cover the recent ASHRAE Exposition and its concurrent events. Hot news items have already appeared—first naturally—in the NEWS, along with photographic reports. Three of the editors spent a major share of their Chicago time attending the many technical sessions and symposia of ASHRAE. Here are summaries of the important conclusions and findings presented there.

Must Design Cooling for Active People

With the expanding use of air conditioning, the engineer must design his system today not for the person moving from the unconditioned environment to the air conditioned one, but for the person who remains in the air conditioned environment.

That was brought out at the air conditioning symposium.

Prof. H. K. Fahnestock of the University of Illinois reminded the engineers that the human comfort zone has not yet been blocked out precisely. He pointed out that not much is known about the comfort level of people who are doing active work as compared with persons at rest. Some studies are currently being made, however.

Physiology indicates that a person is comfortable when his skin temperature stays between 91 and 93°F. It also indicates that the body changes its skin temperature and metabolism to meet changing weather conditions.

But at 70°, metabolism and skin temperatures have made all the adjustments they are going to without feeling cold. At 97°, there remains little room for body temperature to adjust.

Studies indicate that when a person increases his work output, his skin temperature drops about a degree or two.

"We as engineers must now be concerned with how people react to air conditioning after their bodies have made all the natural adjustments," Prof. Fahnestock said.

He noted that the humidity level is more important to the active person than the sedentary one. How to adjust the humidity and temperature relationship to make both comfortable in the same environment—such as at dance halls—was bandied about with no conclusions reached.

Dr. R. G. Nevins described research being done into air movement throughout a room. He indicated that the comfort limits are reached when air velocity exceeds 50 fpm and vertical air temperature varies by more than 3°.

Richard Signorelli, assistant to the vice president of manufacturing at Mueller Climatrol, pointed out that an unsolved problem in residential air conditioning is control of humidity on cool days, when it can't be done without chilling the air still further.

He described Mueller's attempt to solve this problem by using a two stage compression with the second stage for humidity control (twin compressors).

Performance was satisfactory, he indicated, though the consumer had to be advised that the advantages were obtained only at increased operating costs. . . .

However, marketing the unit proved disappointing, foundering on the stumbling block of educating the trade to sell and install the new type unit.

F. T. Appel, projects manager for the air conditioning division of Whirlpool Corp., described the problem of humidity control by room air conditioners, citing the unit introduced by Sears, Roebuck & Co. last year. This unit, he said, can remove 25 lbs of water in 24 hours, giving it a greater moisture removal capacity than any portable dehumidifier.

The unit, he said, is controlled by temperature when outside temperatures are high and by humidity control only when the temperature control is satisfied.

How Draft Fails with Low Firing Rate

Draft failure, which lets products of combustion seep into the house instead of going up the chimney, can occur with modulated firing rates if a masonry chimney is located on an exterior wall and exposed to the weather on three sides, according to A. G. Wilson of the National Research Council of Canada.

While down-draft can be caused by wind, draft failure can happen with outside chimneys during mild weather without wind when low fire is maintained with pot-type oil burners or hand-fired coal furnaces, Wilson said.

Interior location of the chimney or the use of conventional on-off firing is much less likely to result in draft failure, Wilson indicated, and he cautioned that the development of furnace units with firing rates modulated to heating requirements could lead to draft failure problems even though heating system performance might be otherwise improved.

Major cause of draft failure, as disclosed in Wilson's discussion, is the dropping of mean flue gas temperature in the chimney to a point below the mean house temperature.

Factors contributing to these conditions, he pointed out, include chimney location, firing rate, opening of windows while occupants are sleeping. general "tightness" of the house structure, etc.

See Dissolved Oxygen As Corrosion Cause

Discussing corrosion inhibition on steel tubes in low pressure steam boilers, F. J. Pocock of Babcock & Wilcox research center emphasized that dissolved oxygen is the principal cause of corrosion.

Specific recommendations on types of inhibitors and procedures to be used were suggested by Pocock based on results of a five-year research program directed by the Steel Boiler Institute.

Air flow rate is relatively insignificant in the efficiency of wet cell humidifiers, according to Dr. Melvin W. First, describing research conducted for Buffalo Forge. Instead, the amount of water and wetted surface area are quite important, he indicated, suggesting also that fine spray nozzels offer a considerable improvement over coarse nozzles.

Metastability of water in steam boilers which causes it to flash into steam at tempreatures above or below the expected boiling point probably doesn't create pressure pulses great enough to cause damage, but there seems to be evidence that the phenomenon occurs more frequently in steam boilers and other pressure vessels than commonly thought, it was pointed out in a paper presented by Prof. B. H. Jennings.

Nature Abhors Stability

In commenting on this paper, Dan Wile of Recold, referring to some experiments conducted by his company, said, "Our conclusion is that nature abhors stability and that metastability is the normal state."

Final paper at the first technical session was a discussion of fin design for finned tube coils presented by Prof. B. Gebhart of Cornell. Considerable improvement in heat transfer can be obtained with relieved fins of different geometry than with the rectangular flat fin, the studies showed.

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—Frank J. Versagi,
NEWS *Editor*

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Study Heat Flow Through Home, Insulation

A field laboratory for heating studies set up at Stillwell, Minn., comprised of two identical residences, was described by G. A. Erickson, director of technical sales services for the Wood Conversion Co. at the second technical session.

Studies conducted recently found that differences in solar heat between a sunny winter's day and a cloudy day two days later under almost identical temperature and wind conditions made a 10% change in demand upon the heating load of the homes.

Erickson also reported that during a four-week period in February, 1960, baseboard electric radiation provided 75% of the heat in the residences, solar radiation 9%, appliances 11%, and occupancy load 5%.

Seek Picture of Heating Demand

Erickson said that the studies are an attempt to provide a complete picture of the interplay of various heating demands and heating losses to which a structure is subjected when placed in the transient environment in which it actually exists.

Tests made during the first winter's operation were to determine actual energy requirements and operating costs under a variety of defined and controlled inside conditions and a complete monitoring of the outside environment, he explained.

Researchers studied ceiling, wall, and floor insulations and the effects of a variety of weather conditions, including solar radiation and wind speed and direction upon the energy consumption of individual rooms as well as the complete houses.

They also compared actual heat loss requirements with calculated heat losses.

Commenting on Erickson's paper, R. L. Boyd of Wiegand Co. stated from the floor that the study would appear to support strongly the thesis that insulation and double and triple glazing return greater saving in capacity required and energy consumed for heating than conventional calculations indicate they will.

Need More Study Of Emissivity

A paper on heat transfer through mineral wool insulation in combination with reflective surfaces delivered by C. E. Lund and R. M. Lander of the University of Minnesota pointed up the need for additional studies on surface emissivity in enclosed air spaces.

Effect of surface contamination on reflective surfaces exposed to field conditions and upon overall heat transfer may be a serious factor after exposure of only a few years, they said.

They concluded that the ASHRAE *Guide* method of calculating thermal transmittance coefficients for walls and ceilings containing air spaces in combination with mineral wool insulation, with heat flow under winter conditions, agrees closely with test values for either reflective or non-reflective surfaces.

Summer Heat Flow Values Vary from Guide

"Agreement is not as satisfactory for heat flow under summer conditions," they said, "and an even greater difference occurs for reflective surfaces than for non-reflective surfaces."

They suggested that further studies should be instituted with heat flow down on air space conductances enclosed in conventional joists spaces which are 4 in. or more deep and insulated with high and low emissivity materials.

Concrete vs. Wood Floor

Richard D. Cramer and Loren W. Neubauer of the University of California, reporting on studies on the thermal effects of floor construction, found that, in California, concrete slab construction had thermal advantages over wood floor construction.

"Concrete slabs have the advantage of being cooler during the hot part of the day," they said. "On the other hand, the concrete slab is warmer at night. A warm floor is clearly an advantage in December with its cold nighttime temperatures . . . (and in) spring when nocturnal temperatures are too cold for comfort in the wood floor construction.

"During the summer, in both June and in September, the wood floor cubicle has an advantage at night, but its advantage during this season could be virtually eliminated by generous nocturnal ventilation."

Lack Thermal Data on Building Materials

Melvin Mark, dean of faculty at Lowell Technological Institute, reading a paper prepared in cooperation with Mark E. Stephenson, consulting engineer, deplored the great paucity of information on the characteristics of building materials on the market today.

Mark asserted that we don't have data on the thermal characteristics of these products. Data available does not tell the whole story, but only that relating to the conditions under which the material is expected to operate.

Mark presented data to indicate that not only is apparent density alone an insufficient specification for thermal conductivity, but that it is often of less importance than the influence of cell size.

Is Venting Answer To Oil Burner Pollution?

Pulsation and noise in oil-fired equipment, subjects which are not yet fully understood, apparently can be best minimized by venting the combustion chamber, although the possible escape through the vent of smoke, odor, and flame can present problems in certain installations.

This was the major practical conclusion to be reached from three papers on the subject presented here.

Two papers had been prepared jointly by C. F. Speich and A. A. Putnam, both of Battelle Memorial Institute, and the third was the work of R. W. Sage and H. F. Schroeder, both of Esso Research & Engineering Co.

Greatest noise reduction, 16 db, can be achieved by eliminating pulsation, which is easily accomplished by venting, according to Sage and Schroeder.

Where pulsation is not a problem—in the majority of installations—flame noise level can be reduced 5 to 8 db by lowering the firing rate and using a narrower spray angle, but further noise reduction through simple equipment changes seems unlikely, said the Esso engineers.

Pulsations appear to be caused by acoustical phenomena and a periodic rate of heat release, indicated Speich and Putnam.

Acoustics of the furnace determine the frequency and amplitude of the noise, the frequency being so low that acoustic filters for residential systems are practical, explained the Battelle representatives.

Venting the combustion chamber relieves the acoustic pressures within the furnace, thus minimizing pulsation, they added.

"Flameholders" would eliminate periodicity of heat release seem "to have great promise for control of pulsation, if they can be made inexpensively, and if they can be designed to minimize deposit problems," Speich and Putnam declared.

Much more information is needed on the whole subject, however, the authors of the three papers generally agreed.

Search for Minimum Wall Thickness

The domestic refrigerator symposium concerned itself with the use of foam insulation and much of the discussion concerned the characteristics and operation of foam producing machinery in refrigerator plants.

It also included, however, a report on the initial phases of a study to determine minimum wall thicknesses in domestic refrigerators and freezers.

So far, the study has only confirmed by experiment computations for walls constructed of air filled fibrous glass faced on both sides with .030-in. steel, painted on the outer side with three mils of white lacquer.

Minimum wall thickness of this material for refrigerators at 38°F and 50 fpm air velocity appears to be 1.3 in. and for freezers at -5° and 50 fpm air velocity 2.4 in.

The study also found that convection heat transfer at high air velocities appears to be greater than anticipated from formulae in the ASHRAE Guide.

However, more testing is needed to explore this area and to confirm the validity of this conclusion, the report advised.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

R-22 A Sensitive Trouble Indicator

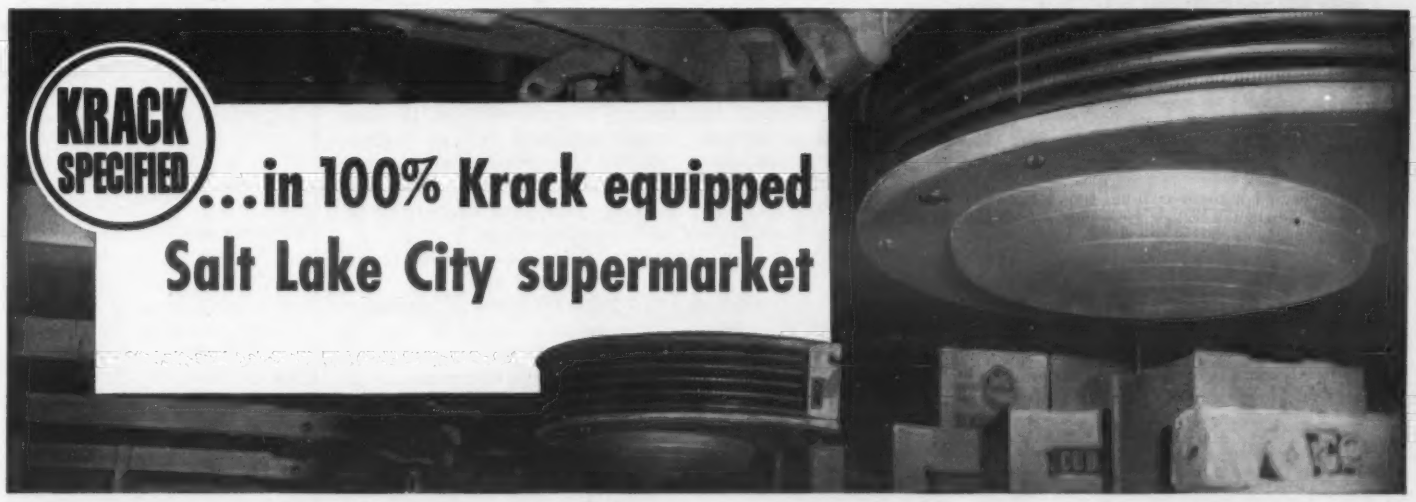
Refrigerant-22 is the first gas to appear when a mixture of oil and *Refrigerant-12* react. Thus, R-22 becomes the most sensitive indicator of any reaction or decomposition which may have taken place in a refrigerating system.

This was one of the important findings of Dr. H. O. Spauschus, research associate at General Electric who reported it in a paper at the semi-annual meeting of ASHRAE.

"As conditions become severe," Spauschus reported, "*severe* meaning higher temperature, longer reaction time, less highly refined oil, new reactions products appeared in the order HCl, CO_2, CO, and CH_4," (hydrochloric acid, carbon dioxide, carbon monoxide, and methane.)

Quantities of hydrogen are small, he indicated, suggesting that reaction between the hydrochloric acid and iron or steel in the system is "of minor magnitude for the conditions studied."

As in previous studies, Spauschus and his co-worker, G-E physicist G. C. Doderer, used mass spectrometry as the analytical method in detecting and determining the reactions between Refrigerant-12 and petroleum oils.



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Acme Uses 3-Faceted Approach To Assure Better Service on Its Liquid Chillers

Manufacturers are increasingly realizing the importance of good service in maintaining their reputations for quality equipment. It is the non-progressive company which still considers service a necessary evil.

Many approaches are being tried in the effort to improve service and ultimate customer satisfaction: central service, regional parts depots, increased training programs, customer education. From time to time, the NEWS describes the techniques being used by several manufacturers.

This is such a report.

By Frank J. Versagi

JACKSON, Mich. — A three-faceted approach to better service is being given new impetus by R. L. Bishop, service manager of Acme Industries, Inc.;

1) Establishing "Acme Authorized Service Agencies";

2) Selling a service agreement as part of the original purchase;

3) Tying the warranty to a validated start, test, and check procedure.

"Service agreements are a necessary part of any successful installation," Bishop feels. "Their omission leads to dissatisfied customers and jeopardizes future sales." (The new program is being used first on packaged water chillers.)

Service Contract Recommended

Since Acme's warranty, which conforms with industry practice, covers only the replacement of defective parts, and does not cover the cost of labor to remove and replace these parts, service contracts are recommended to provide for field labor charges to perform this work.

An independent service organization enters into an agreement with the installing contractor or owner. To be recommended by the Acme salesman, the service organization has previously provided details of its services, charges, and liabilities, Bishop reports.

The Acme sales office, after screening, qualifying, and establishing a working agreement with such a selected service company, may quote the appropriate "service agreement" on behalf of the organization, or arrange for the salesman of the service agency to quote the Acme customer direct.

Service Contract Separate and Distinct From Equipment Order

"In either case," Bishop explains, "the service agreement is a separate and distinct order for services and is not a part of the Acme equipment order." Such agreements are strictly between the buyer and the independent service organization, even though the organization may be appointed an Acme Authorized Service Agency.

Acme salesmen are instructed to submit detailed information about any company they feel would make a qualified service agency. Among the data desired:

—affiliations with other manufacturers (Agency need not be exclusive for Acme, although this is preferred.)

—personnel: number, position, education,

—firm's experience in the industry: chillers, packaged air conditioners, compressor repair, shell-and-tube repair, etc.,

—equipment: trucks, buildings, sheet metal facilities, welding equipment, refrigeration tools such as vacuum pump,

—labor cost per hour.

"The service company we have in mind," says Bishop, "is not normally an installing contractor, distributor, who wholesaler. The company is usually small in size and relies mainly on service contracts for its livelihood."

Acme's experience has indicated the importance of getting good service during the warranty period, both from the customer's and Acme's viewpoint.

"It's a familiar story in the industry that if a unit doesn't give you trouble in the first year or so, it probably never will; most problem children start right out being that way."

Thus, merely returning the warranty card is not enough to obtain protection; accompanying the warranty must be a completed and signed form listing the steps in the start, test, and check technique. An Acme salesman must be on the job site when the procedure is conducted. (See Check List in Box.)

2 Basic Types of Service Agreements

Acme visualizes two basic types of minimum service agreements—the start, test, and check program and a one-year warranty service contract.

In the first, Acme suggests this coverage:

1. Complete checks and tests outlined by Acme's check list.

2. Provide all labor to repair and/or replace defective parts.

3. Adjust, lubricate, clean, and test all parts, controls, valves, and strainers that are a part of the Acme equipment.

4. Provide refrigerant charge, if unit is shipped with holding charge only.

5. Include a second visit to the job within 7 days after start-up to inspect and correct any operating problems, including changing of driers and a recheck on the system following Installation Check List.

6. A proviso should be included requiring the service agency to receive from the customer a signed release indicating his acceptance and agreement that all services originally agreed upon have been provided to his satisfaction.

For the one-year warranty contract, Acme suggests:

1. Provide the necessary labor to take care of the replacement of parts covered by Standard Acme Warranty.

2. Specify the number of inspection and/or service calls included in the contract, as well as providing a clarification of obligations and exclusions during the one-year period — as preventive maintenance, year and seasonal shut-down, second season start-up, false alarm calls, equipment adjustments by other than contract servicing group, responsibility for lost refrigerant charge.

Bishop cites surveys which indicate that average service rates to start, charge the system, check and test, plus one year service for a package liquid chiller vary from $10 to $20 per horsepower.

Acme Packaged Liquid Chiller Installation Check List

Job Name ..... Job Number .....

NAMEPLATE DATA

Unit Model No. ..... Unit Serial No. .....
Compressor Model No.....Compr. Serial No.....Refrig.....
Volts..... F. L. A. ..... L. R. A..... Phase..... Cyc.....

Installation Steps	CHECK POINTS	Yes	No	Ck. By
1—Equipment Inspection	a) Unit undamaged on arrival	☐	☐	.....
	b) Material received agrees with shipping papers	☐	☐	.....
2—Setting Unit	a) Vibration isolator used	☐	☐	.....
	b) Spring isolator adjusted for equal height	☐	☐	.....
	c) If rubber in sheer isolators used unit must be levelled by shimming	☐	☐	.....
3—Wiring	a) Electric Service adequate for load	☐	☐	.....
	b) Power source voltage correct for motor used	☐	☐	.....
	c) Motor circuit has proper size fusetrons	☐	☐	.....
	d) System wired per Diagram	☐	☐	.....
	e) All lead connections tight	☐	☐	.....
	f) Wiring complies with local codes	☐	☐	.....
4—Piping	a) Piping complies with applicable codes	☐	☐	.....
	b) Condensing temperature regulation means used	☐	☐	.....
	c) External piping independently supported	☐	☐	.....
5—Leak Tested	a) System tight with refrigerant and nitrogen pressure	☐	☐	.....
6—System Dehydration	a) Ambient Temperature during Dehydration	☐	☐	.....
	b) Final vacuum reading before charging ..... (absolute pressure in inches Mercury or °F from Vacuum Indicator)	☐	☐	.....
7—Charging System	a) Type Refrigerant use R.....	☐	☐	.....
	b) Amount of Refrigerant used....lbs.	☐	☐	.....
8—Alignment	a) Direct drive unit aligned to specified tolerance	☐	☐	.....
	b) Motor feet dowelled to base (if motor not installed at factory)	☐	☐	.....
9—Before Start Up	a) Check for proper compressor oil level	☐	☐	.....
	b) Open compressor suction and discharge shut-off valves	☐	☐	.....
	c) Open main condensers water supply valve (be sure water reaches condenser)	☐	☐	.....
	d) Open suction, discharge and oil pressure gauges	☐	☐	.....
	e) Check interlock of chilled water and condenser water pumps. Also check rotation	☐	☐	.....
	f) Start auxiliary equipment (Pumps, fans, etc.)	☐	☐	.....
	g) Check crankcase heater operation	☐	☐	.....
	h) On direct drive unit check rotation of compressor	☐	☐	.....
10—After Start Up	a) Check oil pressure. It should read 40-60 lbs above suction pressure	☐	☐	.....
	b) Recheck oil level in crankcase	☐	☐	.....
	c) Check high pressure control	☐	☐	.....
	d) Check oil pressure safety switch	☐	☐	.....
	e) Check and adjust low pressure Freeze Protection control	☐	☐	.....
	f) Check and adjust operating thermostat	☐	☐	.....
	g) Check low pressure operating control	☐	☐	.....
	h) Check and adjust expansion valve superheat	☐	☐	.....
11—Capacity Control Adjustment	a) Capacity controls adjusted to system design conditions	☐	☐	.....
	b) Capacity control operation checked and setting recorded under operating data	☐	☐	.....
12—Clean Up	a) Final leak tests made	☐	☐	.....
	b) Shut off valves backseated, packing nuts tightened and caps replaced	☐	☐	.....
	c) Clean up around unit	☐	☐	.....
13—Operating Personnel Instruction	a) Proper instructions given to customer's personnel in the operation of the unit	☐	☐	.....

OPERATING DATA

1—Pressure Gauge Readings
(a) Discharge ..... psig;
(b) Suction ..... psig;
(c) Oil ..... psig;
2—Net Oil Pressure
(c) - (b) ..... psig
3—High-Pressure Switch Setting
(a) Cut Out ..... psig
(b) Cut In ..... psig
4—Low Pressure Switch Setting
(a) Cut Out ..... psig
(b) Cut In ..... psig
5—Low Oil Pressure Switch Checked
6—Low Pressure Freeze Control Setting
(a) Cut Out ..... psig
(b) Cut In ..... psig
7—If Part Winding Start, time delay is ..... seconds.

Reviewed by: .....Date.....
Approved by: .....Date.....

A completed copy of this check list MUST be returned to Acme Industries with the Warranty Card.

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Hermetic Trends & Service Requirements (6)

*By John J. Floreth, Vice President and Director of Services, York Div., Borg-Warner Corp.**

SUMMARIZING the history and impact of hermetic compressors on the air conditioning and refrigeration industry, this series of articles goes on to discuss modern concepts of hermetic servicing.

To obtain such vacuums, two or even three separate pull downs may be necessary as it has been proven that approximately 90% of the water vapor and residue acids are removed each time. Each time the partial vacuum is broken we recommend the system be swept with dry nitrogen to further eliminate the non-condensable elements.

The results will be gratifying, and well worth the added time and expense, to eliminate future service complications and danger of repeat failures from that greatest enemy, moisture.

The next step is accurate refrigerant charging by weight which is a necessity with restrictor tube systems to assure maximum performance in accordance with design conditions. Accurate refrigerant charging to factory specifications is the only positive assurance that all system defects have been corrected.

If the system does not perform properly with the correct refrigerant charge, then you can be sure an uncorrected problem still exists in the circuit.

Even most thermal-expansion valve systems require a specific refrigerant charge, which may be important to prevent compressor damage when the system is operating under low ambient conditions.

The final step is a thorough leak test which is recommended for any refrigeration system, but is a "must" for more critical charge hermetic systems. Regardless of how small a leak may be it will eventually result in another service call, and another failure in your customer's eyes. As you are aware, the motor of a hermetic compressor is cooled by the refrigerant gas flowing through it and a short charge of refrigerant can quickly result in overheating and failure.

As we all look forward to the growth of our industry during the next decade, and strive to find the formulae that will enable us to accomplish 50% to 75% of our market potential, we must each fully accept our share of the service responsibility.

As a manufacturer in the hermetic industry, we have definite obligations to the ultimate consumer that extend beyond the furnishing a well engineered, durable, and reliable product.

It is the manufacturer's obligation to provide the basic training you need to establish an efficient and profitable installation and service facility. This must extend beyond the form of printed and illustrated instructions, to include factory service training schools, field training materials such as sound film, slide film, 35mm color slides, equipment mock-ups, and other techniques that will assist the contractor or distributor to train his supervisory personnel, dealers, and mechanics.

The manufacturer should also provide a continuous program to keep field servicing agencies constantly abreast of new product developments, better service methods and procedures, time and cost saving devices.

When failures do occur, it is the manufacturer's responsibility to provide replacement components geographically located to make them available to authorized servicing agencies and the ultimate customer within 24 hours. When we accomplish true market penetration our customers will expect this service and we must be organized to provide it.

If your automobile gives you trouble you drive it to a servicing dealer and can pick it up several hours later. In today's market your home appliances or television sets are generally repaired within 24 hours from the time you advise of difficulty. Our industry must plan and prepare to match these service standards.

It is apparent that the day of the replacement circuit is passing both because of its economic limitations and its limiting effect on design. As we look to the future we must think in terms of replacement components, such as motor-compressor units, rather than replacing complete hermetic circuits or systems.

The time is approaching for the establishment of factory controlled, even if privately owned, compressor and other component repair stations at strategic geographical locations other than the main manufacturing plants. The constant retooling and rearranging of factory assembly lines for new and improved designs will force our industry to this method of service replacement, and the cost of transporting defective components to the factory will also spur the establishment of qualified field repair facilities.

In this area, training is again extremely important, and definite standards must be set to assure a satisfactory service product. In the not too distant future you may find yourself qualifying to repair sealed hermetic motor-compressors just as you are competent to repair or rebuild an open type compressor today.

Finally, as manufacturers, we must maintain an accurate, up to the minute, analysis of product failures, by model, by application, component part, by geographical area, by servicing agency and many other details. These records are necessary to the proper guidance of our engineering and research groups to assure better products, more trouble-free operation, lower cost, and the continued advancement of our industry.

(To Be Continued)

•An edited version of a talk before Refrigeration & Air Conditioning Contractors Association.

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C. A. Olsen Appoints Lindsay Sales V. P.

ELYRIA, Ohio — The C. A. Olsen Mfg. Co.'s appointment of R. W. Lindsay, formerly director of marketing, to vice president in charge of sales has been announced by R. N. Campbell, president.

R. W. Lindsay

Lindsay succeeds Edward P. Hayes, executive vice president. Hayes will remain active with Olsen as marketing consultant to the president, relinquishing the heavy workload which he has carried for many years, it was pointed out.

Rote Heads Research For Mueller Brass

PORT HURON, Mich. — The appointment of Dr. Franklin B. Rote as the new director of research and development for Mueller Brass Co. has been announced by F. L. Riggin, Jr., president.

Dr. F. B. Rote

Dr. Rote's metallurgical career includes service with the International Nickel Co., the Engineering Research Institute at the University of Michigan, and the Wyman-Gordon Co.

Dr. Rote returned to the University of Michigan and was, for five years, the assistant and associate professor of metallurgical engineering and metal processing. Dr. Rote then spent nine years as technical director and later vice president of the Technical Div. at Albion Malleable Iron Co. in Albion, Mich.

Broadens Production Of Compressor Parts

CHICAGO — A stepped-up program for making available replacement valve plates and shaft seals for the repair of compressor models not now included in its catalog for 1961 was announced by Chicago Valve Plate & Seal Co.

While the present catalog is unusually complete, "the demand for additional models of Chicago designed valve plates and shaft seals has emphasized today's trend in the repair and rebuilding of open type, semi-sealed, and hermetic compressors in a wide range of sizes," the company said.

"Adjusting to customer demand, parts are being manufactured to repair compressors built in the '40s and '50s as well as the more recent models. Over half million compressors have been given a new lease on life with Chicago parts."

Ace Pump Co. Moves To President Island

MEMPHIS — Ace Pump Co., formerly of 140 Hernando St., Memphis, has moved to its new building in the widely publicized Memphis President Island Harbor and Industrial area.

Ace manufactures for the air conditioning and refrigeration industry the Ace model 77 NRS descaling acid diaphragm pump and a complete line of 1,750 and 3,450 rpm centrifugal pumps, it was pointed out.

Roy E. Bell, Jr., sales manager for Ace, said the change "will provide needed growing space, improved working conditions for employes, and, through the modern Presidents River Rail Truck Terminal, faster shipping to our customers. The area is less than 10 minutes from downtown Memphis."

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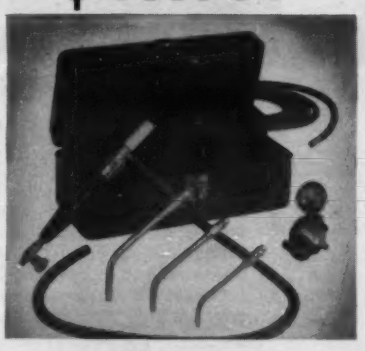

Install • Service • Find and Fix Leaks with the

PREST-O-LITE

Refrigeration and Air Conditioning Outfit

This single compact kit costs only $43, yet contains every essential piece of equipment for your work. You get three interchangeable open-flame stems to provide the right air-acetylene flame for soldering, brazing, or heating. Fit the sensitive leak detector stem to the same torch handle, and you can pinpoint the tiniest halide gas leaks—as little as 100 parts in 1,000,000 parts of air. Compare that with soapy water!

In one sturdy carrying case, the kit also includes an adjustable gas pressure regulator, torch handle, and hose—everything for the installation, repair, and everyday maintenance of all types of refrigeration and air conditioning systems. See your local *Prest-O-Lite* dealer. Or write Linde Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N. Y.

LINDE COMPANY **UNION CARBIDE**

"Linde," "Prest-O-Lite," and "Union Carbide" are registered trade marks of Union Carbide Corporation.

Davison Says 'Microtraps' Almost Completely Resistant to Attrition

BALTIMORE — "Microtraps" almost completely resistant to attrition in severe applications have been developed by W. R. Grace & Co., Davison Chemical Div., and are now available to the refrigeration industry and others using these synthetic zeolites for desiccant and other purposes, the firm announced.

"The extent of the improvement has been established in shake tests," it was pointed out. "Whereas the former Davison grade, as 4-8 mesh beads, developed 11.8% of through 100 mesh fines in trichloroethylene, the new product shows less than ½% in the same test.

"In R-12 refrigerant the older grade showed 7.2% fines; the new product less than ¼%.

"Shake tests show the amount of desiccant passing through 100 mesh sieve after 30 minutes of violent agitation in 4-oz sample bombs which are 90% full of Microtraps beads and contain just sufficient liquid to cover the beads.

"The improvement in attrition resistance has been accomplished without loss of adsorption capacity. All Davison production of the Microtraps is converted to the new grade."

The new product is designated Microtraps AR ("attrition resistant"), and priced at $1.25 per pound, f.o.b. Baltimore. This is no advance over previous prices. Quantities of 10,000 lbs or over are priced at $1.10 per pound.

You Asked About It

Edited by Hugh T. Mahar

Formerly limited to things technical, this column has extended its scope to reflect the wide range of reader service performed by the NEWS. From our files, from our editorial staff, from experts in the field, we will draw the information necessary to answer reader questions of general interest whether they be on engineering or merchandising, on service or accounting.

Q. Has the geographical distribution of heat pumps changed since the breakdown you published in your Sept. 21, 1959 Heat Pump issue? May I have your permission to reproduce this table as a slide to illustrate a talk on heat pumps as it applies to our products?—Valve Manufacturer.

A. The general geographic distribution pattern of heat pumps has not changed significantly from late 1959, when the Southeast accounted for 40-45% and the West and Southwest together took 35% of heat pump shipments.

Floridian readers point out that many of the shipments credited to neighboring Georgia are warehoused there for ultimate installation in Florida.

You have permission to reproduce our data, so long as the NEWS is given appropriate acknowledgment.

●

Q. What are the proper storage conditions for batteries?
E.W.—Luxembourg

A. The reply comes from **R. D. Moriarty, Ray-O-Vac Co.:**

It is known that a dry battery will freeze at a temperature of 25°F (with the exception of special low temperature designed dry batteries). Extensive testing has been performed by the U. S. Navy to obtain storage temperature information. At a storage temperature of a -30°F the Navy found little difference in capacity between initial data and data obtained after four years.

Using a storage temperature of 10°F the test showed for every three to four month's storage at 10°F was equal to one month's storage at 70°F. This was based on capacities at the end of a given storage period.

Our experience has been that any temperature below room temperature is advantageous and that any reduction in temperature below 40°F may not be justified due to the fact that the refrigeration to meet lower temperatures is quite costly. From the information supplied by the U. S. Navy a storage temperature of 40°F showed for every two to three months' storage at 40°F was equal to one month's storage at 70°F. This was based on capacities at the end of a given storage period.

It is also known that a high relative humidity is not good for storage as it will short the batteries and if the battery is metal clad, it would rust and corrode the batteries. If low humidity is used the battery would tend to dry out and have results of low capacity.

A good rule to follow would be not to exceed a relative humidity of approximately 6% or go below a relative humidity of approximately 25%.

All batteries should be prepared before storage with some type of protective covering, such as a polyethylene bag. After removing the battery from storage and until the battery temperature stabilizes to room temperature, the battery will sweat. This covering will protect the battery from the moisture produced by sweating.

T. L. Tyler Named To Tyler Board

NILES, Mich. — Thomas L. Tyler has been elected a member of the board of directors of Tyler Refrigeration Corp., succeeding Leon L. Tyler, 91, who announced his retirement from the board at the annual stockholders meeting.

T. L. Tyler

Leon Tyler, who has served on the board since the founding of the firm in 1927, was elected honorary director.

Thomas Tyler is an engineer in the Tyler Research & Development Dept. He was transferred to the main Tyler plant in Niles last year, after having served with the Wilson Div.

NEW! Waterproof!

NOW STANDARD ON ALL REGULARLY CATALOGUED JE SOLENOID VALVES

New epoxy-clad coils are line-tested at 2300 volts completely submerged in water. Eliminate coil failure! Impervious to almost anything and everything—condensation, fluid spray, frost, oil, gasoline and other corrosive liquids and vapors. Unlimited indoor or outdoor applications. U.L. listed. Wire, write, or phone:

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these **Revcor** blower wheel achievements * *can help you improve your product*

* **high output performance**
Revcor sets the standard for the industry.

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provide less run out, better balance.

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on double inlet wheels reduces length of shaft on direct drive wheels.

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through exclusive Revcor designs.

REVCOR BLOWER WHEELS
are used by over 60% of the Room Air Conditioner Manufacturers!

REVCOR MAKES ALL 4
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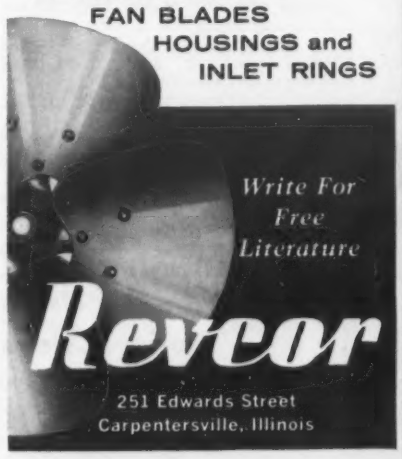

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NEW! AIR CONDITIONING

HEATWAVE

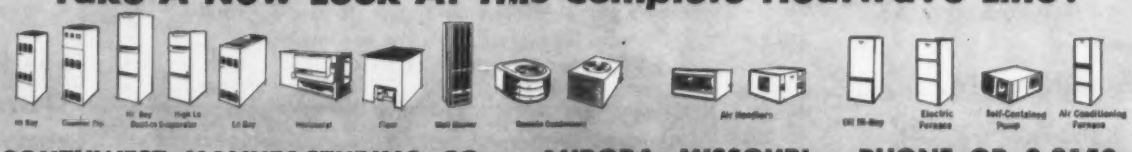
AIR HANDLER
For use with Condensing Units or to help you sell the growing Heat Pump market! Ideal for handling profitable light-commercial jobs too! Auxiliary heat available. 2 thru 10 tons.

HEATWAVE EK SERIES
(Also Available in PEK SERIES HEAT PUMPS)
Remote Air-Cooled Condensing Unit
Here's modern design in a heavy gauge steel cabinet, completely weatherproofed! Has cadmium-plated guard, liquid sight glass and service valves. 2 thru 10 tons. ARI certified.

THERE'S A NEW "PROFIT-PLUS" PROGRAM FOR YOU THIS SEASON!

Now Heatwave offers you more PROFITS, plus a completely expanded NEW line! You'll find everything you need to close more sales in air conditioning this season. Start making more sales, more profits now with the line that gives you heating **and** air conditioning models to sell both residential and light-commercial installations. Write or call collect today!

Take A New Look At This Complete Heatwave Line!



SOUTHWEST MANUFACTURING CO. • AURORA, MISSOURI • PHONE OR 8-2158
A Subsidiary of F. E. Myers & Bro. Co. of Ashland, Ohio

FHA To Require ARI Certification--

(Continued from Page 1, Col. 5)

manufacturers sell about 90% of the unitary equipment installed.

The new requirement does not include heat pumps or room air conditioners.

The section in the Minimum Property Requirements containing the new requirement is 1004-5.1, which refers to the refrigeration system of summer air conditioning. It reads:

"1004-5.1 Refrigeration systems and components shall comply with American Standard Safety Code for Mechanical Refrigeration, ASA B9.1 and the applicable standard of the Air-Conditioning & Refrigeration Institute (ARI).

"a. Unitary air conditioning equipment (not including room air conditioners or heat pumps) shall be listed in the ARI Directory and display the ARI symbol of certification.

"b. Refrigerants used shall be non-toxic and non-combustible and shall be approved as a Group 1 refrigerant as classified in ASA B9.1 Code except that sealed absorption systems may use Group 2 refrigerants when in compliance with this Code."

While only one other revision was made in the cooling requirements a number of changes were made for heating.

Motor Standard Changed

The other cooling requirement change calls for motors to be in accordance with Underwriters' Laboratories, Inc. Standard for Air Conditioners, Central Cooling, Subject 465.

Previously the standard used was that for air conditioning, commercial, and domestic refrigeration equipment, subject 207A.

Major Changes In Heating Requirements

quirements include a complete revision of the section on forced circulation warm air systems, a change in the formulas for estimating kwh consumption for electric heating and for adjusting for the difference between labeled voltage and service voltage, and the dropping of the ASHRAE "Guide" as the source of outside design temperatures.

Outside design temperatures, for use in heat loss calculations, will now be those established by the local FHA office.

The old section 1003-14.3, covering forced circulation warm air systems, has been divided into three sections. The revised version is as follows:

1003-14.3 Forced Circulation Warm Air Systems:

"Design and installation shall be in accordance with the ASHRAE Guide or applicable manual of the National Warm Air Heating & Air Conditioning Association, except as otherwise provided herein.

"1003-14.4 Perimeter Systems In or Under Concrete Floors:

"a. Heating ducts shall be completely encased in not less than 2 in. of concrete except when the duct is of concrete pipe, ceramic tile, or asbestos-cement. All ducts embedded in slabs shall have a minimum of 2½ in. of concrete above the duct.

"b. When the bottom of ductwork adjacent to the perimeter of the slab is at or above exterior finish grade, ducts and fittings may be of any suitable, noncombustible material not subject to deterioration in the presence of moisture. Duct materials complying with FHA 'Criteria and Test Procedure for Combustible Materials Used for Warm Air Ducts Encased In Concrete Slab Floors,' dated April 16, 1956, may be used except within two duct diameters of the supply plenum. Joints may be made by taping, grouting, or other similar means.

"c. When the bottom of ductwork adjacent to the perimeter of the slab is below exterior finish grade, ducts, fittings, or any other part of the duct system which is wholly or partly below exterior grade shall be of ceramic tile or asbestos-cement. Any joints in the duct system which are wholly or partly below grade shall be watertight. Taped or cement grouted joints are not considered watertight.

"1003-14.5 Use of Underfloor Space as a Plenum:

"a. General.

"1. Underfloor spaces not exceeding 24 in. in height to the bottom of floor joists may be used as a supply or return plenum in single story structures, or single-story portion of multilevel structures.

"2. Fuel-burning devices shall not be installed in a plenum and all material enclosing the underfloor space, including any perimeter wall insulation, shall have a flame spread classification not exceeding 200.

"3. The construction enclosing an underfloor plenum shall be sealed against air leakage and the ground surface shall be covered with a vapor barrier material complying with 713-5 having joints lapped at least 2 in. and not sealed. Ground cover material having a flame spread classification of over 200 may be used, provided it is covered with at least 2 in. of sand or similar noncombustible material.

"4. A noncombustible receptacle shall be provided under each floor type opening into the plenum in accordance with NFPA Standard 90B.

"5. If the underfloor space serves as a crawl space, access shall be provided through an opening not more than 18 by 24 in. fitted with a tight cover and located to discourage use of the space for storage purposes.

"6. Provide two vent openings in the perimeter wall, complying with 604-3.2 equipped with tight-fitting closures operable from the outside and screened in accordance with 604-2.3.

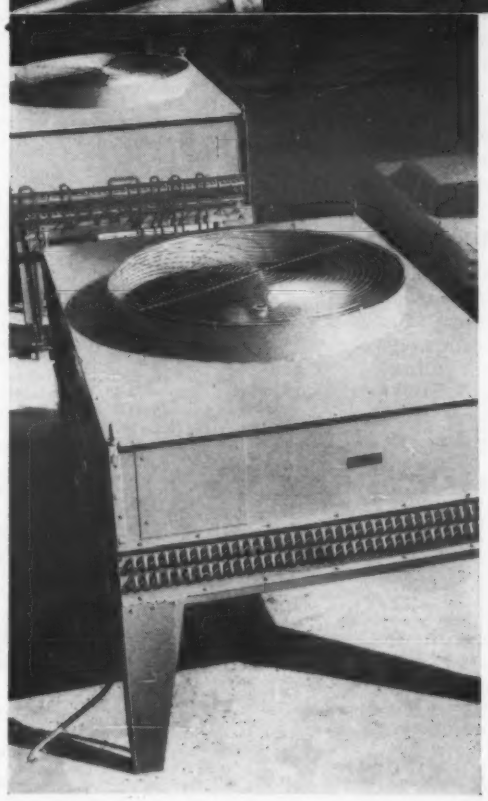
"7. The perimeter wall shall be insulated in accordance with 714-3.5.

"b. Underfloor Space as Supply Plenum:

"Provide at least 4 stub ducts having a minimum length of 6 ft., connected to the furnace plenum, and directed toward supply registers. A clearance of at least 1 in. shall be maintained between ducts and joists, beams, or any combustible construction. Longer ducts may be required to properly direct air toward remote registers. High sidewall outlets may be used in bathrooms and kitchens only."

Albion Promotes Lewis

ALBION, Mich.—The promotion of William H. Lewis from service manager to advertising and sales promotion manager for Albion Div. of McGraw-Edison Co. was announced by W. G. Kronauge, vice president of sales for the division.



. . . H&M's Limitrol valve lets you use them year-round!"

"Many of my air conditioning and refrigeration systems have to operate 12 months a year. But cold weather used to raise cain with compressor-condenser balance.

"Then I learned that Halstead & Mitchell had a Limitrol pressure modulating valve that adjusts their air-cooled condenser capacity to compressor head pressure, whatever the outside temperature. What's more, H&M gives me multiple circuiting at no extra cost!"

You'd do well, too, to standardize on H&M Air-Cooled Condensers. There are propeller fan models with vertical or horizontal air discharge, and centrifugal fan models for inside installation with ductwork. Capacities of 5 to 100 tons.

Want more information? Call your parts wholesaler or write for Bulletin AC-102. Halstead & Mitchell Co., Dept. H-33, Bessemer Building, Pittsburgh 22, Pa.

Air-Cooled Condensers • Air Handlers and Coils • Cooling Towers • Water-Cooled Condensers

HM Halstead & Mitchell

Metals & Controls Holds Open House, Seminar Sessions for Eastern Servicemen

ATTLEBORO, Mass. — One hundred and fifteen motor servicemen attended the second annual open house for the service industry at the Spencer Products group of Metals & Controls Inc.

Those attending represented service shops in New England, New York, and New Jersey. Metals & Controls, manufacturer of the "Klixon" line of motor controls, is a corporate division of Texas Instruments, Inc.

The open house included a tour through the motor protector and motor starting relay production areas and through the metalworking facilities of Metals & Controls' General Plate Products group.

Following a welcoming address by John F. Wilson, manager of the Spencer Products group, the first seminar session was held.

Leo Kowal, service industry specialist at Metals & Controls, outlined the company's program that began in 1948 to provide motor shop personnel with information on motor protection, with the object of trying to help solve the protection problems that arose in the service industry.

The second session, led by Richard M. Parker, manager of the Replacement Parts department, described the greater availability of replacement parts that has resulted from the Klixon distributor organization established in recent years by the firm.

The third session was devoted to a description of a newly-developed motor protector, designed especially for the service field. The new Klixon service shop on-winding protector will be introduced on a national basis at the NISA convention in June.

ADMINISTRATIVE ENGINEER

UNUSUAL OPPORTUNITY FOR AN ADMINISTRATIVE ENGINEER. SHOULD BE M.E. GRAD WITH DESIGN EXPERIENCE IN FIELD OF COMMERCIAL REFRIGERATION OR OTHER ALLIED LINES. MUST BE THOROUGHLY FAMILIAR WITH PRACTICALLY APPLIED PRINCIPLES OF REFRIGERATION AND AIR FLOW, ETC., PREFERABLY IN THE FIELD OF COMMERCIAL REFRIGERATION. SHOULD HAVE EXTENSIVE DESIGN EXPERIENCE IN SHEET METAL AND BE COMPLETELY FAMILIAR WITH UP-TO-DATE TECHNIQUES IN SHEET METAL FABRICATION.

THIS IS A CHALLENGING OPPORTUNITY WHICH WILL LEAD TO THE POSITION OF CHIEF ENGINEER AS SOON AS ABILITY IS DEMONSTRATED. SEND RESUME IN CONFIDENCE GIVING A FULL HISTORY AND SALARY EXPECTED TO BOX A-6735, AIR CONDITIONING, HEATING & REFRIGERATION NEWS.

Attention:

SALES ENGINEERS

Experienced Sales Engineers needed for a complete line of air conditioning products. Men with proven sales capabilities required. Geographical selections possible. Must be *graduate engineers* with experience in sales engineering.

Opportunity for permanent association with one of the most progressive, experienced manufacturers in the world.
Liberal health insurance, vacation and retirement programs.

ALL INQUIRIES CONFIDENTIAL

Address qualifications to: P. H. Shaw

Worthington Corporation
14 Fourth Avenue, East Orange, New Jersey

LOCAL INTERVIEWS CAN BE ARRANGED

Current Literature

McQuay

MINNEAPOLIS — A 16-page refrigeration catalog has been published by McQuay, Inc., 1600 Broadway St., N.E., Minneapolis 13, Minn.

Pictures and complete descriptions, together with concise tables, present the firm's complete line of commercial refrigeration equipment.

Detailed information on specifications, capacities, and accessories is included in the catalog to make easy selection possible. There is also a detailed series of rapid selection tables for McQuay's walk-in coolers, freezers, and hardening rooms.

Copeland

SIDNEY, Ohio — Two brochures, covering specifications and performance data of new four and six-cylinder Copelametic motor-compressors, have been published by Copeland Refrigeration Corp. here.

These new models, introduced recently by Copeland, extend the horsepower range of low temperature applications from 5 hp to 7½ hp and 10 hp. The high temperature range is increased from 10 hp through 30 hp.

Both presentations illustrate complete physical specifications, features, and capacity and performance data in low and high temperature ranges. The brochures are Form #6001 (7½ hp, 10 hp, 20 hp) and Form #6006 (10 hp, 20 hp, 30 hp).

Barber-Colman

ROCKFORD, Ill. — Barber-Colman has released a new handbook entitled "The Electrionic Handbook," which covers the application of electric and electronic controls in commercial and industrial air conditioning installations.

The handbook explains in detail the theory of electric and electronic controls, makes comparisons between electronic and pneumatic controls, and is completely illustrated with photographs and diagrams, the company said.

To obtain a copy of the Handbook, address inquiries to Barber-Colman Co., 1300 Rock St., Rockford, Ill.

Robertshaw-Fulton

ANAHEIM, Calif. — A case-history report describing the method used to protect in-plant compressors through the use of Robertshaw - Fulton's "Vibraswitch" malfunction detectors has been prepared by Robertshaw's Aeronautical & Instrument Div., Santa Ana Freeway at Euclid Ave. here.

The report (V-109), which offers ideas for plant and stationary engineers faced with problems of voiding breakdown of vital rotating and reciprocating equipment, describes the manner in which this method was used at the Spokane, Wash. plant of Pacific Northwest Alloys, Inc. "Vibraswitch" is a vibratory malfunction detector designed for use with all types of rotary and reciprocating equipment.

Bell & Gossett

MORTON GROVE, Ill. — An easy-to-follow six-step guide to help designers of cooling tower installations plan their pump and piping requirements has been published by Bell & Gossett Co. here, the company announced.

"Six Step Manual for Sizing Cooling Tower Pumps and Piping" is the title of the eight-page booklet illustrated with diagrams and charts.

A page of charts illustrating the capacities in gallons per minute of B&G's series 1522 1531 pumps is included in the booklet. Also included are two tables, one showing total equivalent pipe footage for different pump pressure heads, the other showing the carrying capacities of various pipe sizes in gallons per minute.

Free copies of the guide may be obtained by writing to Bell & Gossett Co., Morton Grove, Ill.

ATTENTION — SURPLUS AIR CONDITIONING EQUIPMENT FOR IMMEDIATE SALE

Self contained and remote air conditioning systems, furnace coils, air handlers and major components from 2 ton through 5 ton available at real close-out prices. All new equipment. Call, write or wire LAUREL PRODUCTS, P. O. Box 137, Riverfalls, Wisconsin. Phone Hamilton 5-2442.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications $10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

GENERAL SERVICE manager, 25 years' experience in all phases of air conditioning and refrigeration installation and service. 15 years as manager. 12 years with Carrier distributors, 6 years with York service company. Resume on request. Contact C. W. SWAIN, 11709 N. E. 8th Avenue, Miami, Florida.

SERVICE ENGINEER — Experienced, refrigeration — air conditioning — heating. Commercial-industrial-technical training. Will travel. Prefer Southwestern states. Will give full details of experience and training in first letter. BOX A6736, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

SEVERAL BRANCH manager positions available in major cities throughout the eastern and southern United States. National manufacturer now expanding operations requires individuals experienced in soliciting and servicing industrial air conditioning and warm air heating installations. If progress in your present job is not fast enough, and you have at least five years' experience in sales and service, this is an opportunity to step into a branch manager's position. Experience must include contacting plant engineers, building superintendents and building maintenance supervision. Men selected will be factory trained, receive operating and selling assistance. Salary and generous profit sharing plan. This is a ground floor opportunity to become a part of a national operation with unlimited possibilities. Send resume and snapshot. BOX A6732, Air Conditioning, Heating & Refrigeration News.

COUNTERMAN EXPERIENCED for Florida refrigeration supply jobber. We are a growing concern and the man we want must have capability to handle all phases inside sales and purchasing. Send complete resume, salary expected. Our employees know of this ad. BOX A6734, Air Conditioning, Heating & Refrigeration News.

TECHNICAL WRITER and application engineer required by manufacturer of air conditioning equipment—location Western New York State. Excellent opportunity for qualified graduate engineer with minimum of three years' experience in residential air conditioning and heat pumps in preparing installation manuals, engineering specification sheets. All inquiries will be held confidential. BOX A6739, Air Conditioning, Heating & Refrigeration News.

AIR CONDITIONING installation and service man—At least five years' experience (Carrier equipment preferred). Some refrigeration and oil burner experience desirable. Central Florida East Coast. Year-round employment. No lay-offs. Non-union. Excellent opportunity for right man. Send complete resume. BOX A6741, Air Conditioning, Heating & Refrigeration News.

SALES ENGINEER to cover exclusive Philadelphia and Southern New Jersey territory for large established firm handling top lines of ammonia and Freon refrigeration, air conditioning and ventilation equipment. Must have technical degree and related sales experience. Age under forty-five. High commission earnings against substantial draw. BOX A6742, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT FOR SALE

BRAND NEW icemaker pump motor and impeller repair kits for Scotsman Carrier $18.00 at Kesco wholesalers coast to coast. Bronze replacement icemaker pumps for York Carrier $29.95. Hose connection adaptors for York Carrier $1.00. Complete line condensate pumps from 10' to 50' head, 115-208-230 volts. Catalog. KESCO, Jamaica 13, N. Y.

ATTENTION REFRIGERATION Servicemen. Send for catalog listing values in refrigeration and air conditioning parts, relays, capacitors, compressors. Savings up to 50%. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

BUSINESS OPPORTUNITIES

WANTED, A-1 manufacturers agents throughout most of U.S. to join existing network of air conditioning agents. Distributorships also available for commercial refrigeration products. This "since-1910" manufacturer of over 500 air conditioning and commercial refrigeration products provides one of the most complete lines in the industry. Query in confidence, National Sales Manager, Drayer-Hanson Div., HI-PRESS AIR CONDITIONING OF AMERICA, INC., 3301 Medford St., Los Angeles 63, California.

DESIRABLE COMMERCIAL refrigeration, sales & service, business in North Central Florida. Two employees and serviceman owner at present. Very good opportunity for expansion. Desirable franchises, etc. For information and terms write BOX A6712, Air Conditioning, Heating & Refrigeration News.

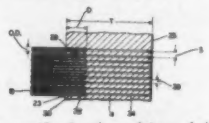
AIR CONDITIONING contracting company for sale. Uninterrupted $59,000 annual average earnings record past 15 years. Sale price of total operation including complete sheet metal shop, furniture, fixtures, trucks and inventory for only a fraction of one year's average earnings. Los Angeles area. BOX A6740, Air Conditioning, Heating & Refrigeration News.

MISCELLANEOUS

AIR CONDITIONER TESTING with the most complete testing facilities in the Midwest, we are in a position to do custom testing and rating of most all models of air conditioning equipment. All testing done on a "cost plus-hourly basis". We also have surplus testing equipment for sale or lease. Phone or write: Howard Bentley, c/o WESTERN SUPPLY COMPANY, Hutchinson, Kansas.

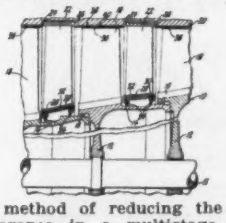
PATENTS *Week of Dec. 6*

2,962,805. METHOD OF MAKING HEAT EXCHANGER TUBE-TUBE SHEET JOINTS. Oscar W. Heimberger and Robert M. Wallace, Massillon, Ohio, assignors to The Griscom-Russell Co., Massillon, Ohio.



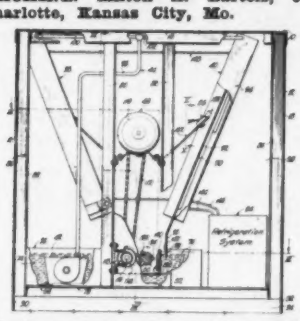
3. The method of making joints between the ends of thin-walled ⅝" to 1" outside diameter tubes and tube openings extending through a heat exchanger tube sheet in which the tube sheet is in excess of 10" in thickness and in which the ratio of tube spacing to outside tube diameter is 5 to 4; which includes the steps of providing a tube sheet in excess of 10" in thickness having a shell side face and a head side face, forming a plurality of centers in the head side face, drilling a plurality of holes in said head side face centers into the tube sheet wall for a major portion of the tube sheet thickness. . . .

2,962,869. METHOD OF MAKING A COMPRESSOR SEAL. Frederick R. Short, Indianapolis, and Robert B. Koschmann, Gladstone, Ind., assignors to General Motors Corp., Detroit, Mich.



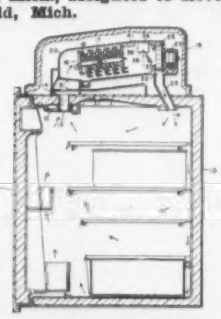
1. A method of reducing the blade tip clearance in a multistage axial-flow air compressor of the type that includes a rotor carrying a multiplicity of rotor blades within a housing member which supports a multiplicity of cooperating stator vanes, by applying to the inner portions of said compressor housing adjacent the tips of said rotor blades a coating comprising a heat-hardenable mixture of about 7% to 45% by weight of a silicone-type resin, a volatile solvent in an amount not in excess of about 65% by weight, and 15% to 55% by weight of a filler material selected from the class which consists of powdered graphite and asbestos. . . .

2,962,869. CRUSHED ICE MAKING MACHINE. Milton A. Bartels, 6711 Charlotte, Kansas City, Mo.



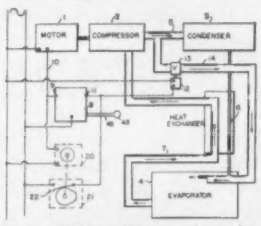
1. In apparatus for making crushed ice, an assembly having a sloping plate and coil means in heat exchanging relationship with the underside of the plate; means for supplying water to the upper side of the plate; means for supplying the coil with a cooling medium; means for supplying the coil with a warming medium; an inclined, hollow water scoop having an inlet extremity disposed in spaced relation to said upper side of said plate at a zone of the latter below the upper extremity thereof. . . .

2,962,870. DEFROSTING SYSTEM AND APPARATUS. Edward J. Von Arb and Howard J. Tenniswood, Adrian, Mich., assignors to Revco, Inc., Deerfield, Mich.



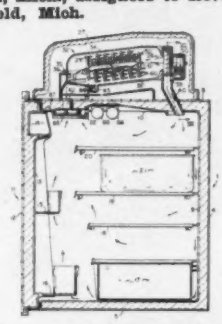
1. Refrigeration apparatus comprising, in combination; a thermally insulated cabinet; a case situated outside of said cabinet; said cabinet having an exhaust air port communicating with said case; an evaporator within said case; refrigeration system means causing said evaporator to chill air in said case; said case having a chilled air opening communicating with said cabinet; means for circulating air in a path through said exhaust port, across said evaporator. . . .

2,962,871. DEFROSTING AND HEAD PRESSURE RELEASING REFRIGERATING APPARATUS. Frank P. Crotser, Adrian, Mich., assignor to Revco, Inc., Deerfield, Mich.



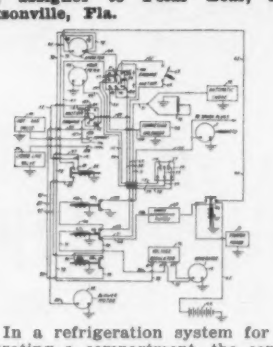
1. In a refrigerating system, in combination, a compressor, a compressor motor, a condenser, an evaporator, a hot gas conduit leading from said compressor to said condenser, a restricted passage leading from said condenser to said evaporator, a return conduit leading from said evaporator to said compressor, a by-pass to conduct hot gas prior to transformation to a liquid phase from said hot gas conduit to said evaporator, electrically operated means for opening and closing said by-pass. . . .

2,962,872. REFRIGERATOR CONSTRUCTION AND CONTROLS. Frank P. Croster and Howard J. Tenniswood, Adrian, Mich., assignors to Revco, Inc., Deerfield, Mich.



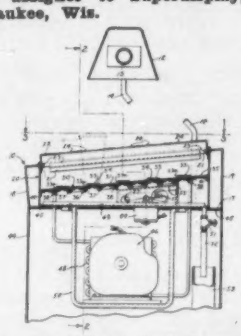
1. A refrigerator comprising, in combination, a thermally insulated cabinet adapted to contain food stuffs to be refrigerated, said cabinet having a ceiling with an exhaust air port therein, a housing located on top of said cabinet and having an exhaust air opening registering with the exhaust air port in said ceiling, a refrigerant evaporator within said housing, said housing having a chilled air opening, said ceiling having a chilled air port with which the chilled air opening of said housing is connected. . . .

2,962,873. REFRIGERATION SYSTEM. John L. Anderson, Jacksonville, Fla., assignor to Polar Bear, Inc., Jacksonville, Fla.



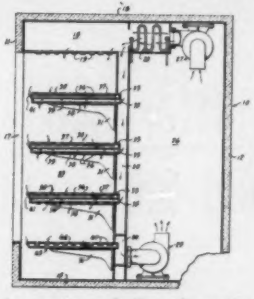
1. In a refrigeration system for refrigerating a compartment, the combination of a refrigeration unit including a compressor, a gasoline engine for actuating said compressor, an electrical motor for actuating said compressor independently of said engine, a direct current generator connected to be actuated with said compressor, an electrical starter motor for starting said gasoline engine, a direct current battery. . . .

2,962,874. COOLING TRAY FOR FOOD PRODUCTS AND BEVERAGES. Harold J. Pitzgerald, Whitefish Bay, Wis., assignor to Superdisplay, Inc., Milwaukee, Wis.



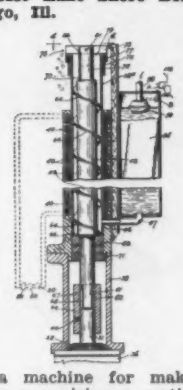
1. A refrigerated display unit comprising an enclosed cooling box portion for a plurality of food containers removably supported therein, said box portion having a bottom, side walls, an apertured top plate for slidably receiving the major portion of said containers therethrough and a supporting base member disposed intermediate said top and bottom and arranged to provide a bottom support for a plurality of food containers resting thereon. . . .

2,962,875. UPRIGHT REFRIGERATED CABINET WITH UNIMPEDED FRONT ACCESS. Louis F. Barroero, 1585 Daniels Dr., San Leandro, Calif.



13. Apparatus of the character described comprising a hollow refrigerator support shelf having upper and lower surfaces containing perforations distributed throughout their areas, an imperforate member between said upper and lower shelf surfaces forming upper and lower interior air compartments within said shelf, means forming an air conduit between the interiors of said upper and lower compartments, blower means for moving air through said conduit from the interior of one compartment into said other compartment, and refrigerating means in said conduit for cooling air passing therethrough.

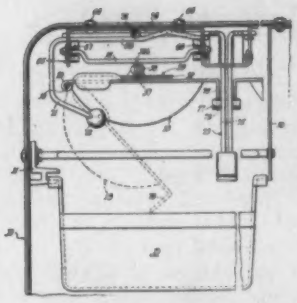
2,962,877. MACHINE FOR MAKING AND FLAKING ICE. Rubin Chaplik, 4619 N. Central Ave., and Jesse J. Shelley, 3180 Lake Shore Drive, both of Chicago, Ill.



1. In a machine for making and flaking ice comprising a vertically positioned freezing column having a discharge opening at the upper portion of said column, a rotatable screw member vertically positioned within said freezing column for advancing the ice formed therein upwardly toward said discharge opening, an ice disintegrating member secured to said rotatable screw member adjacent the upper discharge opening and rotatable with said rotatable screw member and directly in the path of movement of the advancing ice for breaking up said ice and discharging it through said discharge opening. . . .

2,962,876. SEMI-AUTOMATIC ICE CUBE MAKER. Clyde F. Baker and Romeo Bougie, Muskegon Heights, Mich., and Florence B. Anderson, Winnetka, Ill.; said Baker and said Bougie assignors to Borg-Warner Corp., Chicago, Ill.

2. In an ice making machine, a tray; a grid disposed within said tray including relatively movable plates for dividing frozen material within the tray into blocks; means for supporting the tray for pivotal movement downwardly of said grid for separating the grid from the tray. . . .



(To Be Continued)

STOP GAUGE FAILURES with the Vilter® STEDY-MOUNT®

Thousands of installations during the past two years prove you can stop gauge failures on reciprocating refrigeration compressors with the patented Vilter Stedy-Mount. Special damper and coiled spring tube isolate gauge . . . absorb mechanical vibration . . . gauge stands quiet. Pointer fluctuation, due to pulsations, is reduced to a minimum . . . gauge registers only true effective pressure. For use with bottom inlet gauges with dials up to 4½" diameter (2 lbs. weight). Write for complete information.

The Vilter Manufacturing Company
Milwaukee 7, Wisconsin

GOLD SEAL LINE TAP VALVES

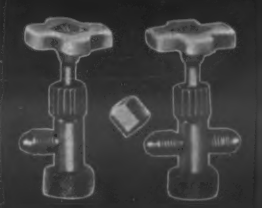
by WATSCO

U.S. Pat. No. 2,827,913

Taps into any refrigeration line from 3/16" O.D. to 5/8" O.D. to charge, discharge, and test a system in minutes.

- PROVIDES A POSITIVE SEALED PORT AT A LOW COST.
- EASY INSTALLATION FROM THE TOP USING 2 PHILLIPS TYPE SCREWS.
- MAY BE INSTALLED WITHOUT REFRIGERANT LOSS EVEN WHILE UNIT IS OPERATING.
- FEATURES 3 POINT SEALING FOR MAXIMUM PROTECTION AGAINST LEAKAGE.

GOLD SEAL SWIVEL CONTROL VALVE



CV-1G CV-2G

Designed to operate all Line Tap, Line Port, Can Tap and Access Valves, the Gold Seal Control Valve incorporates a swivel top, adjustable to an easy working position. Use part CV-1G (single port valve) or part CV-2G (double port valve).

In addition to the above features you will find the Gold Seal Line Tap Valve cannot vibrate loose, will not distort the tubing and has no top heavy assembly. It requires a minimum of space and is tamper proof—Use with Gold Seal Control Valve CV-1G or CV-2G.

For additional information, ask your wholesaler or write to Dept. N-32.

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of Humidifiers and Filters
means MORE SALES
MORE PROFITS for you!
Skuttle MANUFACTURING CO. • MILFORD, MICHIGAN

Defense Dept.--

(Continued from Page 1, Col. 1)

will continue at the present rate or increase is based on both assumption and fact, the spokesman indicated.

There will obviously be no let up in the nation's defense requirements and efforts in view of current world affairs, and it seems likely that as much air conditioning as ever will be required for new and remodeled facilities, he believes.

Possibly even more significant, though, is the fact that the importance and necessity of air conditioning is gaining greater and greater acceptance throughout the armed forces, he declared.

The Air Force has been the leader in this, but recently the Army and Navy have started specifying air conditioning for facilities where heretofore it has been overlooked even though permitted by regulation.

This trend is sure to continue, the spokesman is convinced.

Exactly how much will be spent on air conditioning and refrigeration during the 1961-62 fiscal year cannot be predicted at this time, however. The Federal budget probably won't get through Congress for some months yet.

In the meantime, the Dept. of Defense is urging salesmen and contractors to call on base engineers to learn what jobs are in the offing.

"There's no such list available in the Pentagon, so don't come to Washington for this purpose," the spokesman cautioned.

Just about all such jobs originate at the base level even though a few may require final approval at headquarters, he explained.

The salesman or contractor can also help both the base engineer and himself by keeping the engineer fully informed of latest technical developments and methods, the spokesman pointed out.

Wilmington Project-

(Continued from Page 1, Col. 5)

leases and photos, a special Wilmington residential survey, and posters, pamphlets, site signs, and other promotional material.

Builders' and realtors' salesmen will be given special training in home selling techniques with emphasis on the advantages of centrally-installed air conditioning.

A slogan, "The Crowning Touch . . . Year-Round, Whole-Home Air Conditioning," and a stylized yellow crown have been adopted as identifying symbols and will be used in all advertising, posters, and other promotional activities related to the program.

Results of the test will be made available to the entire ARI membership and are expected to form the basis for similar programs in other marketing areas.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

School Cooling--

(Continued from Page 1, Col. 3)

group has inaugurated a program aimed at startling those concerned with school construction into giving some consideration to the possibilities of air conditioning schools for year-round operation.

Personal Presentations Being Planned

Also being developed are plans for personal presentations to school boards and to architects and consulting engineers who are specialists in school work.

Opening blast in the advertising program hit hard at the theme of the possibility of lowered costs of school construction and maintenance, and thus lowered costs. In ad advertisement headlined "Down With Taxes," an "angry man" cartoon character that has become identified with CRAC program seems to be screaming the above-mentioned admonition. Says the copy:

"Want to save school tax dollars. Just add air conditioning. Old schools accommodate more classes when air conditioned, accomplish better learning. New schools cost less to build, less to operate.

"If you build, run, plan, worry about or pay taxes for schools—if you agree that good education is good for America—smarten up. Get the people who spend tax dollars for schools in touch with the man who can save you a lot of those dollars through air conditioning: your CRAC contractor."

A RACCA of Southern California committee concerned with the program for promoting school air conditioning, met recently with Maurice Wilson of Carrier Corp., who has made an intensive study of the current status and future prospects in school air conditioning.

Concentrate on Secondary Schools

A principal piece of advice offered by Wilson was to concentrate on the secondary school system.

"Authorities at the college level are generally convinced of the importance of air conditioning in their planning for providing facilities for expanded enrollments," Wilson says.

"But at the secondary school level a big job needs to be done to convince all influential elements that air conditioning can do what we think we can prove—improve the students' 'take-home' knowledge because of improved conditions for learning—and at lower costs."

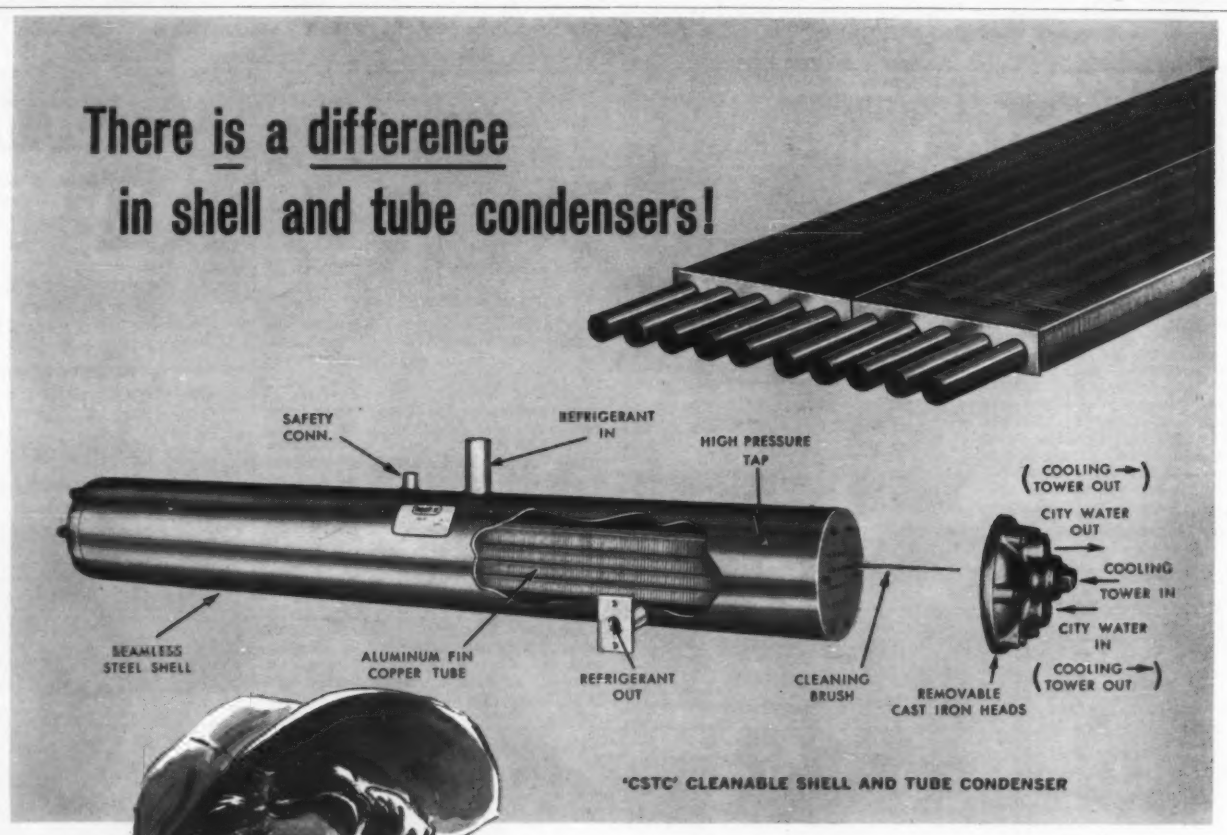
School boards are considered the vital target in any promotion of air conditioning at the secondary school level, since they have a vital concern at providing the best possible facilities at the lowest first and operating costs.

It seems to be the belief of those who have studied the situation that while school officials and some architects and consulting engineers are convinced that air conditioning is very much worth while, that such important influences will not take the lead in espousing any change from the "traditional" types of school construction, and heating and ventilating methods.

Albern, Jackson Named

PITTSBURGH — William F. Albern, Buffalo, and George L. Jackson Co., Phoenix, Ariz., have been named new sales representatives for Halstead & Mitchell Co. here, manufacturer of air conditioning and refrigeration components.

There is a difference
in shell and tube condensers!



'CSTC' CLEANABLE SHELL AND TUBE CONDENSER

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IT'S EXTENDED
ALUMINUM FIN SURFACE

And this superior construction—exclusive with HEAT-X—makes a big difference . . . makes possible

- Greater heat transfer efficiency.
- Better gas distribution across the cooling surface.

These heavy duty, high capacity condensers are specifically designed to simplify the mechanical cleaning necessary in areas where poor water conditions exist.

Internal condenser rigidity is assured by combining five tubes to a "bank". These "banks" are securely bracketed internally to provide a rigid, vibration-free bundle.

Units are available in a wide range of sizes, 5 through 100 tons.

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